EUROPE
ASIA
AFRICA
INDIAN
OCEAN
AUSTRALIA

LIBRARY OF CONGRESS.

Chap. BS651 Copyright No.

Shelf K5

UNITED STATES OF AMERICA.

THE

MOSAIC ACCOUNT

OF THE

CREATION AFFIRMED

AND

SILENT MONITORS OF THE PAST

DESCRIBED AND ILLUSTRATED, WITH

OBJECT LESSONS OF EACH DAY'S PART OF THE CREATION,

TOGETHER WITH THE FORMATION AND COLORING OF ROCKS, AND THE FORMATION OF DIFFERENT KINDS OF COAL, SUPPORTED BY SCIENCES AS TAUGHT AND UNDERSTOOD AT THE PRESENT DAY,

FROM THE CREATION TO THE PRESENT TIME.

BY

JESSE KING,

OF NORRISTOWN, PA.

LIBRARY OF CONGRESS
COPYRIGHT
JAN 22 1892
39815 W1
WASHINGTON, D.C.

PHILADELPHIA

JESSE KING, PUBLISHER.

1892.

1891

BS651
.K5

Copyright, 1891, by Jesse King.

PREFACE.

In presenting this work to the public, the author realizes the fact that he has commenced a great undertaking.

So varied are the opinions of men regarding the creation, or bringing into existence of this world, that we should endeavor to make a careful study of its component parts, and analyze and compare them with the scriptural account given by Moses, in Genesis, and unite science with his description.

We are painfully aware, that we have some of the best-educated minds of the civilized world against us, but by carefully reading and studying their works, we discover their errors and profit by them.

The science of geology as taught to-day may be looked upon as extremely dangerous to the youthful mind. Through its teachings the student is led to disbelieve the account given by Moses, which came from God himself, and to substitute an imaginary theory, which, when studied, proves to be a tissue of theories presumed to suit, to base a

science upon, known in our institutions of learning as the science of geology.

We think, however, the time is not far distant when that science shall be replaced by information which may be more easily understood, thereby profiting the reader for the time he consumes in reading it.

JESSE KING.

INTRODUCTION.

THE CREATION—THE FIRMAMENT—LIKE CAUSES PRODUCE LIKE EFFECTS.

"IN the beginning God created the heaven and the earth."

Here we at once introduce the Author of the Creation, God himself.

I need not write it "in the nervous language of Scripture," as my learned contemporary, J. Dorman Steele, A.M., chooses to term it, in his "Fourteen Weeks' Course in Geology," page 19. No! I have the best of evidence for its authenticity. Were it not as Moses describes it, we might have just reason for trying to advance some theory on which to base a visionary science.

We raise our eyes heavenward, and see the blue firmament extending to a height of forty-five miles from the earth's surface, which Moses tells us was created the second day. The modern geologist gives us no account of its creation whatever.

We examine the earth on which we tread, covered with its mountains, lakes, and oceans, and find it corresponds exactly with the description given of it by Moses.

On the third day, Moses says, the earth was clothed with verdure,—as we now see it. The modern geologist

presents but little information to the botanist. Just how the sturdy oak came into existence without the primitive acorn is not explained by them, although they allow that like causes are produced by like effects, in which we agree, and we make that maxim a strong point in our work.

In order that the reader may clearly understand the matter which we are introducing, we will make a brief analysis of the subject.

Geology, as taught at the present day, declares that "in that far-off beginning" the earth was in an igneous condition, and, while in that igneous or molten condition, it shone as does now the sun and lighted other heavenly bodies, and in process of time it cooled off and became a dark body, and has now to be lighted by other bodies.

While in that igneous or burning condition it was in a state of volcanic disturbance, causing immense volcanic action, thereby forming mountains and valleys. Through what source they trace their theory is not clearly understood. They claim that all unstratified rocks which have no veins or cleavage are igneous rocks, and were once in a melted state,—such as granite, quartz, etc.,—and consequently were the first to crystallize after the earth's surface began to cool; and they have very ingeniously adopted certain names marking supposed periods suitable to the unsettled condition of that imaginative form of creation, and occasionally give God credit with being in some unknown manner a party connected therewith.

They entirely ignore the description given by Moses, forgetting that, if Moses had not written, they probably

would not have been aware of the true God existing to-day. Others have subsequently declared his existence, but Moses was the first. He says that, while engaged in the capacity of a shepherd in the green valleys of Sinai, God appeared to him in a burning bush, saying, "I am the God of thy father, the God of Abraham, the God of Isaac, and the God of Jacob." And when Moses heard that, he hid his face, "for he was afraid to look upon God," or even the burning symbol of his glory.

Geology, as taught in our schools to-day, names the Azoic system as the first or oldest condition of the earth, when the granite or unstratified rocks were formed, down to the beginning of the period in which plants and animals were created. They say, "That the Azoic age was long is shown by the great thickness of rocks which represent it, and that it closed by a grand upturning, bending, folding, and faulting of its rock accumulations."

The second system they name as the Silurian, after the ancient Silurians which once inhabited that part of England and Wales where this system was well studied. That system they have divided into the upper and lower systems, and it comprises the first rocks which have fossils of the lowest order of animal life.

The third system they class as the Devonian system, which is merely a fossil-bearing rock which is found near Devonshire, England. It is claimed to be like the Silurian or second system, but known under another name.

The fourth system is termed the "Carboniferous system, or period," following next in order after the Old Red Sand-

stone, in which special vegetation grew to form our large deposits of coal that are found at the present day.

The fifth system is the so-called "Triassic system," and is merely a fossil-bearing rock found above the Carboniferous rock, and, as they chose to name it, is a rock of a later date.

The "Jurassic system" is the sixth system in their order of invention. It comprises fossil-bearing rocks, also. It derives its name from the Jura Mountains, where it is said to be well developed.

The "Cretaceous or chalk system" is the seventh system in their order of invention.

The "Tertiary" is the eighth system adopted by them.

The "Post-Tertiary system" is the ninth order named by them.

"The present or recent system, and the age of man," is the last of their invention, which embraces a retrospective view of the last-named nine divisions of the observations, which are marked by fossil-bearing stratified rocks. All, as they allow, except the igneous or molten rocks, have been deposited by water, and have since crystallized into sand-rocks, limestone rocks, etc.

They teach that mollusks, or the lowest animal life, first came into existence during the Silurian period, and that a gradual development was made thereafter with each succeeding period of time named in their different systems, because the remains of mollusks, reptiles, mammals, etc., are now found in those stratified rocks which have been formed by sand deposited by water.

The science of geology, as taught at the present day in our institutes of education, is calculated more to confound the student than to assist him in his studies. If the Mosaic account of the creation, and the "destruction of all living" by the cataclysm which God sent, together with the period of time which has passed since that deluge, were strictly taught, the whole matter could be easily understood.

There should be but three distinct periods of time named,—the Ante-Diluvian, the Diluvian, and the Post-Diluvian periods, or, in other words, the period of time before the flood, the time during the flood, and the time since the flood; which could be easily understood and will serve to cover the whole ground. It can be readily seen that some mineral substances which now compose the body of the earth, such as granite, quartz, etc., possessed the property of crystallizing sooner than others, and such formations now found on the surface of the earth give evidence of water having once passed rapidly over them and wearing them partly away by erosion, and the careful observer will notice but little difference between granite and quartz in that respect.

Limestone and sandstone of various varieties are fossil-bearing rocks which were formed by the waters of the flood carrying detritus which enveloped mollusks, reptiles, and mammals, the bones of which are to-day found in a fossilized condition, and all prove beyond a doubt the existence of the deluge which Moses has described in Genesis.

It did not require those ages which our geologic con-

temporaries claim, to cause those deposits in those fossiliferous rocks. The flood before mentioned would have destroyed all living, and their remains must of necessity have found a place of sepulture somewhere, and, if buried in sand hermetically sealed from the atmosphere, and that sand crystallizing as it has, would furnish all the fossil-bearing rocks now found.

Noah was commanded to build an ark, and to take into that ark for the future propagation of animals, as described by God, of clean animals by sevens and unclean animals by twos, which proves that God had a higher regard for the clean animals of his creation than he had for the unclean.

Palæontologists inform us that many animals existed before the flood that are now entirely extinct, notable among which was the mastodon, which at full size was sixty feet long, twenty-five feet high, eleven feet over his hips, and his tusks extended to the enormous length of fourteen feet.

The author returns thanks to the following gentlemen of high standing for valuable information: His excellency R. E. Pattison, Governor of Pennsylvania; David Day, United States Geological Survey; Aimaro Lato, Secretary of Legation of Japan, Washington, D. C.; Ario, Minister of the German Empire; Frank Iszard, of New Jersey; Colonel N. M. Ellis, of Pennsylvania; Gomar Walters Johnston, of Pennsylvania; Dr. John H. Mullen, of Pennsylvania; Hon. George N. Corson, of Norristown, Pennsylvania; Dr. E. M. Furey; Daniel H. Streeper, and others.

CONTENTS.

INTRODUCTION.

PAGE

The Creation—The Firmament—Like Causes produce Like Effects . . 5

CHAPTER I.

The Creation—Biography of Moses—His Marriage—His Death—A New Earth—The Creation of Light—The Earth set in Motion, Revolving on its Axis 15

CHAPTER II.

The Creation of the Firmament—Pressure of the Atmosphere—Miniature Earth 22

CHAPTER III.

Let the Dry Land Appear—God Clothed the Earth with Verdure—Coloring Plants 27

CHAPTER IV.

The Creation of Bodies to Reflect the Light of the Sun—Comparison of Relative Size of Bodies—The Sun an Electric Body and the Source of Fire—Electric Current from East to West—Magnetic Needle—The Earth a Star to other Planets—Rainfall caused by Atmospheric Disturbances—The Ideas of Geologists regarding the Earth's Formation 30

CHAPTER V.

PAGE

Science and Religion are alike God's Offspring—Igneous Condition of the Earth would have caused all Properties to Amalgamate—Different Gases—The Day not considered of Twenty-four Hours 41

CHAPTER VI.

Let the Waters bring forth, etc.—Let the Earth bring forth the Living Creature, etc.—He created Man, etc.—Adam Named the Animals . 47

CHAPTER VII.

Fire in the Centre of the Earth—The Diamond the Product of Crystallized Carbon—The Earth not in an Entire Molten Condition at its Centre—Volcanoes—Earthquakes 54

CHAPTER VIII.

The Genealogy and Age of the Patriarchs from the Creation to the Flood—The Garden of Eden—Giants were upon the Earth—Stump of Tree in Cincinnati—Land Connection between the two Continents 63

CHAPTER IX.

Other Land Connections, Islands of which yet Remain—Man Supposed to have Crossed from Asia to America—Noah Commanded to Build the Ark—Drifts of Tropical Animals and Vegetation to Siberia . . 75

CHAPTER X.

Description of Mount Ararat—The Ten Lost Tribes of Israel 85

CHAPTER XI.

The Formation of Rocks—Description of "Ringing Rocks" in Pennsylvania—Prints of Hoofs and Paws of Animals in those Rocks . . 90

CHAPTER XII.

The Glacial Period—Glaciers carrying Boulders—The Johnstown Flood. 102

CHAPTER XIII.

PAGE

Soapstone and Asbestos—Conshohocken Stone—Scale for Measuring Depth of the Deluge left in Limestone Rocks below Norristown—The Origin of Limestone as our Geologists Assert 112

CHAPTER XIV.

Port Kennedy Bone Cave 123

CHAPTER XV.

Speculative Opinions regarding the Deposit of Fossils in the Port Kennedy Cave—A Live Toad found in the Marble in Henderson's Quarry—Fossils found in Digging a Well Four Hundred and Fifty Miles west of Omaha 134

CHAPTER XVI.

Glacial Striæ—Corrugations in the Vertical Rocks along the Hughes River in West Virginia—Of Clean and Unclean Beasts—Animals Locked in the Polar Regions from the Equator—Rock found in Flat Rock Tunnel—Strata of Deposit in Bridgeport, Pa. 147

CHAPTER XVII.

The Age of Mollusks—The Period of Reptiles according to Geology—The German Mussel-Chalk and Keuper—The Ichthyosaurus, or Fish-Lizard of Antediluvian Origin—The Plesiosaurus—The Pterodactyl, a Flying Monster—The Dinosaurs (Terrible Lizards)—The Labyrinthodon—The Ramphorhyncus 158

CHAPTER XVIII.

Age of Mammals, or those that Suckle their Young—Mammoths—Six Sketches of Mastodons found by a Farmer in a Bog in New Jersey—Brownstone—Bird-tracks in Brownstone—Greenstone 164

CHAPTER XIX.

Formation of Coal—The Mythical Ferns—Trees Rooted in the Soil forming Coal-beds 172

CHAPTER XX.

PAGE

The Mythical Ideas of Geologists regarding the Advent of the Carboniferous Period—Lecture Delivered in West Chester 180

CHAPTER XXI.

Developments of the Anthracite Coal-fields of Pennsylvania by State Geologist Lesley—Professor Lesley's Observations near Chambersburg, Pennsylvania—Composition of Anthracite Coal—The Manner of its Deposit—Wyoming Valley—Massacre at Forty Fort 187

CHAPTER XXII.

Volney's Opinion of Lakes once having existed in the West—Breaking of Reservoir above Girard College Grounds. 203

CHAPTER XXIII.

Trip over the Catawissa Railroad—Letter from Minister of Japan—Letter from Minister Ario of the German Empire—Bituminous Coal—Secret of Burning Coal with Economy—Petroleum—Slate Formation—Graphite 210

CHAPTER XXIV.

Iron-ore—Marl—Deposits in New Jersey—The Remains of a Sea-serpent found in a Marl Bed near "Mullica Hill" 221

CHAPTER XXV.

The Enchanted Mountain of Tennessee—Large Tracks of Human Beings and Horses in the Rocks—Tracks in Limestone Rock along the Mississippi and St. Louis 227

APPENDIX 233

THE MOSAIC ACCOUNT

OF THE

CREATION AFFIRMED.

CHAPTER I.

The Creation—Biography of Moses—His Marriage—His Death—A New Earth—The Creation of Light—The Earth set in Motion, Revolving on its Axis.

THE origin of God is unknown to man. That gifted poet, Alexander Pope, beautifully conveys the subject to the imagination of man in the following lines:

"Thou Great First Cause, least understood,
Who all my sense confined,
To know but this, that thou art good,
And that myself am blind."

I will here introduce a short biography of the author of the account of the creation as recorded in Genesis.

Moses, the great Prophet and Lawgiver of the children of Israel, was born in the year 1571 B.C., and in the second chapter of Exodus you will find an account of his parentage, birth, and infancy. His father's name was Amram, and his mother was of the house of Levi. He died in the year 1451 B.C., aged one hundred and twenty years; his eyes were not dim, nor was his natural force abated. At the age of forty years, he slew an Egyptian whom he saw con-

tending with a Hebrew, and fled into Midian, where he married Zipporah, the daughter of Reuel, or Jethro, a priest, and lived with him forty years.

Whilst Moses was keeping his father-in-law's sheep, God appeared to him in a burning bush, and sent him to deliver the children of Israel, who were in bondage under Pharaoh in Egypt.

At the age of eighty-three years, Moses wrote the book of Genesis, which was fourteen hundred and eighty-eight years before Christ, or about two thousand five hundred and twelve years after the creation. The writings of Moses stand pre-eminent above all others.

Sixteen hundred and fifty-six years had passed from the creation to the flood, during which time the progeny of Adam had peopled various parts of the earth, and their lives extended over a period of about nine hundred years each, which may have had much to do with their wickedness, knowing that each one living on an average to near that age no doubt was in their imagination nearly equal to an immunity from death, and if death did not intervene, eternal judgment would be deferred.

This opinion may be sustained by verse 3 of Chapter VI. of Genesis, in which God, having seen the wickedness of man, shortened his days to one hundred and twenty years; thus, "And the Lord said, My spirit shall not always strive with man, for that he also is flesh: yet his days shall be an hundred and twenty years."

They have subsequently been reduced to "threescore years and ten."

But one person who lived among them, named Noah, who feared God and lived a just and righteous life, preached to them for about one hundred and twenty years, exhorting them to repentance. He was instructed to build an ark during that time, for God, seeing their wickedness, told Noah that it "repented him that he had made man," and that he would bring on a flood and destroy all living.

Mute witnesses of that flood stand out in bold relief, by the presence of granite boulders being worn round by erosion from the passing waters of the flood while those boulders were in an embryotic state of crystallization, and of rocks formed since the flood, many of them being largely fossil-bearing, which fossils were deposited by the waters of the flood and have since crystallized, all being "silent monitors of the past."

Although Moses wrote his book of Genesis eight hundred and fifty-six years after the flood, or two thousand five hundred and twelve years after the creation, and all the foregoing had transpired, yet there was nothing whatever to inform us of that fact until his pen placed it on parchment. His four other books—Exodus, Leviticus, Numbers, and Deuteronomy—were all written within a period of forty years after his book of Genesis. Nor is this all: the Decalogue, comprising the Ten Commandments which he received on Mount Sinai, is to-day the fundamental law on which all the laws for the government of every civilized nation on earth are based. The commandments which he has given us are the underlying principles on which all subsequent writings are based. "Thou shalt not kill,"

"Thou shalt not steal," "Thou shalt not bear false witness against thy neighbor," are among the most important elements of a just and perfect government.

When a witness is asked to give testimony in court, he is reminded of that fact by the clerk of said court handing him the Bible, to impress on his mind the solemnity of the occasion, and the fact that he is about to speak in the presence of God, whose words are contained in that volume. That book has a broad base, it is written for all, it is non-sectarian, and its teachings should be venerated by every one. We have no knowledge of any writings whatever existing prior to the book of Genesis, and Moses appears to have been chosen to deliver that information to us, so that we might have a knowledge of the true God, who created, governs, and sustains the entire universe.

The reader will carefully peruse the introduction on page 5, so that he may become the better acquainted with the subject.

We can gather no information on the subject through any source whatever except what Moses tells us in Genesis.

He says, "In the beginning God created heaven and earth; and the earth was without form and void, and darkness was upon the face of the deep; and the Spirit of God moved over the waters.

"And God said, Let there be light; and there was light.

"And God saw the light, that it was good: and God divided the light from the darkness.

"And God called the light Day, and the darkness Night; and the evening and the morning were the first day."

We will here introduce our first object-lesson, so that the reader may more easily understand the creation of the first day.

It will be observed that the earth was entirely enveloped with water; but we think that there was no water as a part of its internal composition until after the firmament was created, which was on the second day. Quoting from the Douay Bible, Moses says in Genesis, Chapter II., verse 6, "But a spring rose out of the earth, watering all of the earth's surface."

That occurred on the second day, after the firmament had been created and applied, the pressure of which shattered, or fractured, the earth, so that the water entered the interior of the earth, and commenced and has continued to pour through it to the present day.

We are aware that the earth is composed of different materials, known in geology as clay, or earthy substances, and minerals of various kinds; and we believe that all the earthy substances and minerals which now exist in the earth and form its component parts (except coal) were created the first day, but in a more plastic condition than we now find them, because it was a "new earth," and crystallization had not yet taken place. (This fact we will prove, as we advance farther with our work.) It is a matter well known to engineers, architects, and scientific minds, that water is a prime factor in settling or solidifying the earth: that for every cubic foot of water there is a weight or pressure of sixty-two pounds, and a body of water one inch deep covering an acre of ground is equal to

one hundred tons' weight. In contemplating the mighty mass of water surrounding the earth on that day, we can readily perceive the forming of the material of the earth into a globe or round body.

THE EARTH.

Illustrating the Creation of the first day; showing the water around it, the weight of which no doubt moulded it into "form;" the upper or top surface illustrating "Let there be light" at the command of God.

This explains those words, "And the earth was without form, and void," because the substance which now composes the earth was just brought into existence, and had not as yet taken any form, or shape, known in the science of mathematics, until it was surrounded by the "great deep," which may have been created separate and apart

from the earth, the weight of which moulded, or shaped, the shapeless mass of material into a globular or smooth, round body; and on the second day, when the firmament was created, the mountains "were brought forth," and the valleys were formed, which will be explained in the creation of the second day.

It must be remembered, also, that all bodies or properties composing this earth "and the furniture thereof" have a dual meaning. For instance, water is composed of two gases,—namely, oxygen eight parts, and hydrogen one part; and many persons assert that the water which Moses describes as the "great deep" was a body of gases surrounding the earth. But we are willing to accept the rendering of Moses, who was inspired by God himself, who says it was water, and a scientific application of it as water would have served the better purpose, as above stated.

We have as yet spoken only of the earth and water of the first day's part of the creation. But God said, "Let there be light, and there was light."

From that moment time commenced. That mighty luminary known as the sun in the heavens was then created. Our earth was set in motion revolving on its axis from west to east, and it has continued to do so ever since, and will do so until it ceases and time shall be no more; "and the evening and the morning were the first day."

CHAPTER II.

The Creation of the Firmament—Pressure of the Atmosphere—Miniature Earth.

We will now introduce our second object-lesson, illustrating the work or creation of the second day.

We will here state that there is a difference between creating and making. To create is to form, or bring into existence, out of nothing. To make is to build, or make out of material furnished for the purpose.

The reader will please pay particular attention to the creation of this the second day.

"And God said, Let there be a firmament in the midst of the waters, and let it divide the waters from the waters.

"And God made the firmament, and divided the waters which were under the firmament from the waters which were above the firmament: and it was so.

"And God called the firmament Heaven; and the evening and the morning were the second day."

What is heaven, or this firmament which God has created this second day? Webster says it is the atmosphere we breathe, the sky, the air; and is the abode of the blest.

It is composed of oxygen and nitrogen in the following

proportions: about four gallons of nitrogen and one of oxygen will make five gallons of common air. But it always has some other properties mixed with it.

THE EARTH.

Illustrating the Creation of the second day; showing the division of the waters by the creation of the "Firmament," the pressure of which towards its centre caused the "mountains to be brought forth."

It will be observed, also, that our earth has made one revolution, recording the first day of the year one, and is now making its second revolution, performing its second day's journey, at the rate of one thousand miles per hour at the equator, sufficient to dash it to atoms, were it not for this firmament or atmosphere which is being created this second day, which presses on the outside towards the

centre of the earth with a pressure of about fourteen pounds per square inch, or about one ton per square foot; on a surface of two feet square there is a constant atmospheric pressure of four tons.

That superincumbent pressure, when first applied to the surface of the earth, while in its plastic, uncrystallized condition, had the effect of depressing the softer portions of the earth's surface, and raising or forming mountains of the mineral portions, which can be proved by examining into the formation of mountains. None of them on the face of the earth are of earth formation; all are composed of rocks and mineral substances in their interior formation, thus forming our mountains and valleys. Agreeable to natural laws, by that pressure the waters of the great deep were forced into the low depressions, thus forming seas and oceans, immediately, on the second day, when the pressure was applied.

At some places the ocean records a depth of five miles, while an equal displacement took place at other places, causing mountains to rise five miles in height; or, to give a more extended idea, such portion of the earth's composition as was formed of earthy substance sunk until it was sustained by a harder substance, and such portions of the earth's composition as were of harder mineral formation rose and formed our mountains, which, singularly enough, generally extend from northeast to southwest.

We are indebted to Sir Isaac Newton for his discovery of the laws of gravitation, by the apple falling; but he has left us ignorant of the true cause of its gravitating to the

centre of the earth. That cause may be explained in the following manner:

We see that the earth, when it was first created, was entirely enveloped with water, and this firmament when applied could not penetrate the earth, thus leaving the earth a vacuum as far as the atmosphere is concerned; which may be proved by a man descending in the water with a diving-bell,—he must be supplied with air by an air-duct from above the surface of the water.

To further illustrate the foregoing, we will make a miniature earth of material suitable for the purpose. We will get a gum ball two feet in diameter, with an aperture in one place, the walls of which ball may be one-eighth of an inch thick. We will fill it with material of soft and hard substances suitable for the purpose. Having now got it filled, we will apply an air-pump to our opening in the ball, which air-pump must be accurately fitted to pump the air out of the ball, or embryotic miniature earth, because that same atmosphere, with its outside pressure, is inside also, pressing as much outward as inward, thereby forming no vacuum whatever. But, as soon as our air-pump exhausts the air, or firmament, from inside, you will see the outside of our globe, or miniature earth, changing its surface: where the surface is supported by soft substance, such as clay or earthy substance, it will sink; where it is supported by hard mineral substance, such as rock, it will rise, thereby forming mountains and valleys. It will also be observed that the pressure is equal on all sides of our miniature earth, pressing exactly towards the centre, because we

pumped the atmosphere out and formed a vacuum, which is the cause of gravitation towards the centre of the earth.

But it will be noticed that God, who created the earth, needed no air-pump to pump the firmament, or atmosphere, out of the earth, because he first enveloped the earth with water, and did not allow the atmosphere to get into it.

We have yet another wonder to notice in the creation of this firmament, showing the wisdom of the Creator, in this the second day of his creation.

This firmament, or air we breathe into our lungs in its pure condition, is exhaled or thrown off in a poisonous condition, heavily charged with carbonic acid gas, which when exhaled enters into vegetation and supports it, which is again returned to the atmosphere in a pure condition.

This fact, no doubt, had much to do with the longevity of the antediluvian race, who dwelt mostly in tents and not in crowded cities. There were but ten generations from the creation to the flood, including Noah, which extended over a period of sixteen hundred and fifty-six years.

We will dismiss the creation of the second day for the present, and will refer to it again in connection with other portions of this work.

CHAPTER III.

Let the Dry Land Appear—God Clothed the Earth with Verdure—Coloring Plants.

We will now introduce our third object-lesson, and will call the attention of the reader to the creation of the third day.

THE EARTH.

Illustrating the Creation of the third day, when it was clothed with verdure, while it was yet cloudy with an aqueous atmosphere suited to supply an important element in its physical composition.

God also said, "Let the waters that are under the heaven

be gathered into one place, and let the dry land appear; and it was done.

"And God called the dry land Earth, and the gathering together of the waters he called Seas; and God saw that it was good."

From the foregoing we have substantial evidence that the mountains and valleys were formed the second day, which science proves may have been done by atmospheric pressure, because we see the firmament or atmosphere was created on that day and practically applied.

Moses tells us the waters were divided from the waters, which God called seas; and we know that a displacement has taken place to form a bed—as it were—for the waters to lie in.

God now speaks of clothing the earth with verdure. And he said,—

"Let the earth bring forth the green herb, and such as may seed, and the fruit-tree yielding fruit after its kind, which may have seed in itself upon the earth; and it was so done.

"And the earth brought forth the green herb and such as yieldeth seed according to its kind, and the tree that beareth fruit having seed, each one according to its kind; and God saw that it was good.

"And the evening and the morning were the third day."

What wisdom God displayed in the creation of the third day, by providing food for the animal creation before it came into existence; because it will be observed that the great whales and the fishes of every species, which were to

inhabit the waters, were created on the fifth day, and man and animals were not created until the sixth day.

What a field of study for the botanist,—from the smallest blade of grass of but a few weeks' growth, to the most stately forest-trees of hundreds of years' growth, each suited to the climate of such portions of the earth as it was intended for. And, to add beauty and delight to the creation of the third day, he created flowers, with mingled beauty and perfume, to delight the soul and inspire the muse.

To study the creation of the third day closer: we have to admire his artistic wisdom in coloring plants and flowers through the rays of the sun, at which our knowledge sinks into insignificance. When we look at the sun, it appears to reflect but a bright light to the eye of the observer, but it reflects the varied hues of the rainbow; for instance, the blue and yellow rays of light, falling on the rose, are absorbed by it, while the red rays are reflected. The leaves of plants are green, because a peculiar chemical principle called chlorophyl, formed within their cells, has the property of absorbing the red rays of light and reflecting the blue and yellow, which combination produces green; and the same phenomena can be traced through the entire creation.

What exhilarating pleasures and delights are afforded man and beast, under the spreading boughs of the cool shade in midsummer, from the scorching rays of the sun! No doubt it was that pleasure which inspired those fitting words, "The groves were God's first temples." (Bryant.)

CHAPTER IV.

The Creation of Bodies to Reflect the Light of the Sun—Comparison of Relative Size of Bodies—The Sun an Electric Body and the Source of Fire—Electric Current from East to West—Magnetic Needle—The Earth a Star to other Planets—Rainfall caused by Atmospheric Disturbances—The Ideas of Geologists regarding the Earth's Formation.

I WILL now endeavor to represent the creation of the fourth day, which in the face of argument against me must be considered a Herculean task. If, however, I strike one point which is true, I will consider myself well rewarded for my investigations.

We must bear in mind that much of the subject written by scientific men is founded entirely on observation, and each one gives what he considers the most plausible theory. Some, I am satisfied, is without any foundation whatever.

But the most uncompromising obstacle is found in "holy writ." We read in Ecclesiastes, Chapter III., verse 11, of the Douay Bible, "For God has delivered the world to their consideration *for dispute*, so that man cannot find out the work which God hath made, from the beginning to the end."

In the Protestant Bible the rendering of the subject is somewhat different, but the meaning is the same: "He has

made everything beautiful in his time; also, he hath set the world in their heart, so that no man can find out the work that God maketh from the beginning to the end."

My apology for making the attempt is the belief that I am supported by better evidence than most of my learned contemporaries.

We will now introduce our fourth object-lesson, and will ask the reader to carefully consider what we attempt to explain.

"And God said, Let there be lights made in the firmament of heaven, to divide the day and the night; and let them be for signs, and for seasons, and for days, and years:

"To shine in the firmament of heaven and to give light upon the earth; and it was so done.

"And God made two great lights, a greater light to rule the day, and a lesser light to rule the night; and the stars.

"And he set them in the firmament of heaven, to shine upon the earth, to rule the day and the night, and to divide the light and the darkness; and God saw that it was good.

"And the evening and the morning were the fourth day."

We will call the attention of the reader to the sun, that golden monarch of the celestial universe, furnishing light and heat to all the planetary system. Moses speaks of it, together with the planetary system in general, on this the fourth day of the creation; but we unhesitatingly believe that in the morning of the first day of the year one the sun was created, when God said, "Let there be light, and there was light."

THE EARTH.

Illustrating the fourth day of the Creation, when the Sun shone forth in its glory, shedding its rays on the verdure which had been created the day previous and stimulating its growth, thus marking the first clear day in the cycle of time. (See page 31.)

At that moment God started the earth to revolve on its axis, from west to east, which is the first perpetual motion noticed in science, and which motion is still the prime factor in reckoning time. Were it not so, how could the evening and the morning have been the first day? Had it not been so, our scientists would have had nothing to have made time out of.

No matter how we differ in our opinions, we can form but one conclusion,—that is, that the sun was created the first day. Plato calls the sun and planets the organs of time, of which independently of their stated revolutions man could have formed no conception.

Although the sun was not named by Moses on the first day of the creation, still, its effects were noticed. God said, "Let there be light, and there was light."

The earth was surrounded by water, and for three days the face of the sun was obscured by the clouds, or vapor, above the firmament, which we may term cloudy days, the light of the sun only penetrating through the clouds, which phenomenon is common with us yet. On the fourth day it shone out in all its majesty and glory. Thus we see that the first three days of the year one were cloudy days, and the fourth day of the creation was the first clear day.

We have no way of forming an idea of the magnitude of bodies except by comparison. For instance, the earth is 25,000 miles in circumference at the equator, and its diameter is over 8000 miles. The diameter of the sun is 770,800 miles, being one hundred and twelve times greater than that of the earth. The sun's volume is 1,407,124, or

nearly one and a half million times that of the earth, and six hundred times greater than all the planets united.

We have but briefly noticed the sun and earth, but "a lesser light was created to rule the night, and the stars."

We believe the moon and all other planets to be dark bodies, like our earth, each surrounded by an electric atmosphere, receiving their light from the sun, which is a concentrated body of electricity, created as the central figure in the solar system, from whence all light proceeds, and the entire source of fire, from whence all warmth is received, as well as the entire source and supply for all our modern electrical appliances.

In describing the firmament or atmosphere on page 23, in the creation of the second day, I said that the atmosphere was composed principally of two gases,—nitrogen four parts and oxygen one part,—but that there were other properties in it also.

The careful observer will notice, when in a room where electricity is excited to action from its latent condition by dynamos, that a faint blue tinge is visible in the atmosphere of the room when lighted by electricity in the night-time. This pale blue atmosphere is electricity in a latent and partially disturbed state. That same electricity is present everywhere in the atmosphere, in every breath we draw; and when we look to the heavens we see what we call the blue sky, or electricity in a latent state, regularly distributed throughout the entire firmament, or atmosphere, extending, as we believe, to a height of forty-five miles from the surface of the earth. The atmosphere being

more compact near the surface of the earth, it follows that the same condition exists with electricity.

Electricians are uniting in the opinion that there is an electric current constantly passing around the earth from east to west, which is caused by the earth turning on its axis from west to east, which *may* be accounted for in the following manner:

Our entire atmosphere is highly charged with electricity in a latent state, which atmosphere is carried around with the earth; but it may reasonably be supposed, the earth being a solid body, that the atmosphere may not move exactly with the same precision that the earth moves; consequently a current will be caused in an opposite direction from which the earth moves, which is from east to west.

But that which seems most difficult to account for is the fact that, while the electric current is from east to west, the magnetic needle will poise at right angles with that current and will be directed north and south; and it is presumed that, with the same law governing the case, the needle will take position or "settle" in less time at the equator than at the poles, in consequence of less motion of the earth at or near the poles.

It is often asked, what is electricity? The answer is that it is a subtle fluid in all nature in a latent or hidden state, which we feel sure is correct.

We believe it to be supplied to all planets alike by the sun, and when it is night-time with us, and we see the moon and stars shining, it is day-time with them, and their light is reflected to us. The moon, being the nearest

planet to us, reflects its light more brilliantly, especially at its full, as it is called, or when partially full; which changes take place by the earth being at times between the sun and moon. We believe, when the sun illuminates our earth and we have day-time, as we call it, that our earth shines, or reflects its light, to other planets, and that the inhabitants of other planets see our earth as a star during their night-time.

Nor is this all. The latent electricity which pervades our atmosphere supplies fire and artificial light for us.

If we take a match, which is composed of chemicals easily excited by friction, and rub it on a suitable substance, we find it will spring into flame, and, as long as there is wood or any other combustible substance to support that flame, it will burn, or will be in a state of combustion, as scientists call it; but, when that combustible material is consumed, it dissipates itself in the atmosphere again, or, in a common phrase, it "goes out."

Again, to prove the fact of the sun being the sole source of fire, we will take a convex glass and focus its rays, with which we can create enough fire to burn a city. "Every fire that burns, and every flame that glows, dispenses light and heat which originally belonged to the sun." (Tyndall.)

It is further known that, by exciting or disturbing the latent electricity in the atmosphere, moisture is precipitated to the earth.

It was first discovered in Germany that, after a battle where cannon and small arms were brought into active use, rain often fell, for which various reasons have been

assigned. Some scientists say that by the consumption of gunpowder carbonic acid gas is generated in large quantities; and by others the theory is advanced that the rapid discharge of fire-arms causes a vacuum, or many vacuums, in the air, thereby precipitating moisture, which may be the case.

We think that any agent which causes a local disturbance in the atmosphere may produce rain, but none more potent than by exciting the atmosphere with dynamos. Powerful currents of electricity are carried through the air, causing a physical disturbance in its elementary parts.

We know that rain-storms are accompanied by electricity, which proves that they are analogous to each other; and we are disposed to believe further that the latent electricity in the atmosphere is excited, or disturbed, by friction at the cannon's mouth by each discharge, as well as by the vacuum formed in the air at the moment of discharging the same; and it is a matter which all close observers can bear witness to, since electricity is being developed or excited by dynamos for mechanical purposes, in large quantities, all over the country, for lighting streets, and propelling machinery, that our cloudy, damp, and rainy days have much increased.

I will not state that a greater annual depth of rain occurs now than in years past, which was an average depth of forty-six inches in Pennsylvania, but the rain-fall appears to be more regular from day to day. It appears that local disturbances vitiate the influence of the sun in holding the moisture in solution in the atmosphere; consequently the

atmosphere is disturbed and the moisture is precipitated to the earth.

Not only is this the case on our continent, but an article appeared in the Philadelphia *Record* of February 28, 1891, as follows: "LONDON, February 27. Viscount Volmer, in the House of Commons, will ask the Government to appoint a royal commission to examine into the question whether it is possible by legislation to mitigate the increasing prevalence of *fogs*, which are so great a detriment to wage-earners."

Our rain-fall is more general in autumn, winter, and spring, when the sun is south of the equator and its rays fall obliquely on us. In summer, when the sun is north of the equator and is shining vertically, or nearly directly over our heads, it has the power to hold moisture in solution in the atmosphere, and rain is less likely to fall; or, to be more explicit, the physical condition of the atmosphere is not so easily disturbed by local causes.

We will now ask our readers to please give us their attention while we discuss the theories of our modern geologists.

It will be understood that our geologists reject the Mosaic account of the creation, and try to establish a hypothetical account, on which to formulate a science from mistaken, visionary observations. They introduce their work by giving us an imaginary idea of "the origin of the earth's crust according to the nebular hypothesis." Well may it be termed a hypothesis, or supposition.

On the introductory page of Professor Steele's "Four-

teen Weeks' Course in Geology" we read, "Our earth was once doubtless a glowing star. In that far-off beginning it shone as brilliant as do now the sun and fixed stars. In process of time it cooled from a gaseous to a liquid form. It then assumed a spherical figure, in obedience to the same familiar laws of force which round a drop of dew.

"Its atmosphere comprised not only the gases that compose our present atmosphere, but all the oxygen and carbon now locked in the rock and coal masses of the earth, vast quantities of mineral matter vaporized by the fierce heat, and in the form of superheated steam all the water which now fills the ocean.

"The air, thus dense with moisture and poisonous metallic vapors, rested on a seething ocean of fire. Ages passed, and the earth, radiating its heat into space and thus cooling, began to show on its surface patches of solid substances, like the floating films that first appear on water as it passes into ice. These, gradually combining, formed at last a thin crust over the entire exterior. This was, however, constantly rent asunder by eruptions from the molten mass beneath. Huge crevices were opened, and torrents of liquid lava ejected from the cracks and seams were poured in fiery floods over the scarcely solid crust. The surface, arid and burning, bristled with ragged eminences or was furrowed with enormous clefts and cracks. But the earth had ceased to shine as a star, and henceforth was itself to be lighted and at last heated from other bodies. As the globe continued to cool, a time arrived when the heat was not sufficient to support the water in the

form of vapor. Under the tremendous pressure of the dense atmosphere, the steam was precipitated boiling hot upon the heated earth below. Revaporized it ascended again, only to be condensed and returned as rain.

"This process long continued cooled the earth yet more rapidly. The crust, shrinking and cracking as it hardened, became still more uneven with wrinkles and folds, yawning gulfs and fissures. The hot rain falling on the volcanic peaks, the torrents which poured down the mountain-sides and through the valleys, all combined to dissolve the rock and sweep the sediment into the deeper hollows.

"The crust had not yet attained the consistency necessary to resist the pressure of the heated gases and liquids. Hence in this manner also enormous dislocations were made, whose folds and uplifts with deep gulfs and belching lavas denoted terrific convulsions. Thus a fierce conflict was raging between fire and water.

"At last the water triumphed, and the ocean became universal. A hot, muddy, shallow sea surged round the earth from pole to pole. There being no dry land to divert its course, a constant trade-wind must have swept over this primitive ocean spanning the globe.

"Astronomy teaches us the probable origin of our globe. As soon as the crust began to be formed by the mingled action of fire and water, geology steps in to explain the phenomena. In this vague and nebulous border-land the two sciences meet. From that time we find that the earth entered on a regular series of progressive revolutions, which gradually fitted it for the introduction of life."

CHAPTER V.

Science and Religion are alike God's Offspring—Igneous Condition of the Earth would have caused all Properties to Amalgamate—Different Gases—The Day not considered of Twenty-four Hours.

THE foregoing "hypothesis" would have done credit to the author of the "Arabian Nights." Educated men, who will pore over scientific researches for years, who will advance theories contrary to solid, sound reasoning, in the face of everything against them, and formulate a science and have it taught to the youthful mind in our schools, are certainly at variance with the word of God, and are to-day in a great measure responsible for the social condition of mankind.

Over three thousand years ago and fourteen hundred and eighty-eight years before Christ, Moses penned a correct account of the creation, which he received through inspiration from God himself, but which to-day is ignored by many of our educated men, who claim that the account is too superficial and lacks depth of meaning, or, as Professor Steele, in his "Fourteen Weeks' Course in Geology," says, "With the first motion of nebulous matter light was developed, or, in the *nervous language of scripture*, God said, 'Let there be light.'"

They are, however, honest enough to own that "the study of science ought never to lead one astray from this great fundamental thought: God has assuredly never written anything in nature contradictory of himself; science and religion are alike his offspring." Yes! But he who misinterprets science detracts from religion.

Professor Steele says, "With the first motion of nebulous matter light was developed." What was this nebulous matter? Webster defines it as pertaining to a nebula, cloudy. What is a nebula? A faint, misty appearance in the heavens, produced by stars.

But from whence came this nebulous matter to form this earth, which our geologists say was in such an uproarious condition in the "far-off beginning"? Certainly he that was able to create nebulous matter out of nothing at his command could as easily have created the heavens and earth at once, as Moses describes it. The creating of an object, substance, or matter is not so much a question of time as of ability to perform the act. If God was able to create it at all, he could as easily have created it in six days of twenty-four hours each as in any other period of time.

We question whether this nebula which Professor Steele speaks of, which first lighted the earth, had any existence whatever as a luminary, without first receiving its light from the sun. Why not, then, acknowledge at once that the sun was created when God said, "Let there be light, and there was light"?

Perhaps the strongest argument that can be adduced against an igneous condition of the earth, which appears to

be so potent a factor that the most illiterate person can comprehend it, is the fact that, if the earth had been in an igneous or molten condition, as Professor Steele describes it, all mineral substances would have been commingled, as different qualities of iron are mixed into a seething or fused mass by the "puddler" in his furnace. It is well known that all mineral substances will melt at a given heat.

The miner of to-day could have found gold at his own door at home, no matter on what part of the earth he lived, as well as to go to Mexico or California for it. He could have found silver and galena in the same manner, without enduring the hardships and exposures of a life in the "Rockies" of Colorado. Neither would he have been required to make a journey to Lake Superior for copper. All these metals he could have been in possession of by simply sledging a portion off of any antediluvian rock formation which he might chance to stumble over. All mineral substances would have been combined. But that was not God's intention. He wanted to show as much wisdom in the creation of minerals as in vegetation and animals.

Again, our visionary theorists tell us that all gases existed at the time the earth was in an igneous condition, and that it then "shone as does now the sun, and was a bright, shining star." Do they imagine that the stars which now reflect their light on the earth are yet in an igneous condition?

Let us examine that theory.

Our four fundamental gases are known in science as oxygen, hydrogen, nitrogen, and carbon.

What is oxygen? It is a gaseous body found largely diffused through all nature, being an important element of air and water, rocks, earth, minerals, etc. Its principal use is to sustain animal life and to support combustion. By supporting combustion we mean that fuel is decomposed by heat into hydrogen and carbon, and these elements combining with the oxygen of the air produce combustion.

Thus we see that oxygen will not burn of itself, but only when it combines with hydrogen and carbon.

What is hydrogen? It is an inflammable gas. The gas used in our streets is hydrogen, driven out of coal by heat. Hydrogen is the principal ingredient of water. But our theorists must bear in mind, when the earth was in that igneous condition, there was no coal. Hydrogen could only have existed in water.

What is nitrogen gas?—Now comes the difficulty.—It is an invisible gas which abounds in animal and vegetable substances. Its peculiarities are that *it will not burn* and that an animal cannot live in it; and a stubborn fact for our theorists is that four-fifths of our atmospheric air, or four gallons of nitrogen and one gallon of oxygen, constitute our atmosphere. Here is sound reasoning why this earth could never have been in an igneous state.

What is carbon? A solid substance, generally of a dark or black color, well known under the forms of charcoal, lamp-black, soot, etc.

Carbon occurs in nature in two forms,—the diamond and

graphite. As I have said before, all matter or substance is known in nature with a dual meaning. When we speak of a diamond we mean pure carbon in its crystallized state, which possesses the property of being harder than any other mineral, and is capable of either single or double refraction, according to its crystalline form; but the properties of that diamond in an uncrystallized state are coal, charcoal, lamp-black, soot, etc.

We are sure our opponents will not try to prove that carbon existed while the earth was in its igneous condition. According to their theory, the igneous condition of the earth was before the carbonaceous period, and, if carbon occurs in coal and substances of vegetable formation only, they certainly were without carbon at that period. *They did not have the juice of the apple before the apple grew.* And four-fifths of the atmosphere surrounding that "brilliant earth" being of nitrogen gas, which will not burn, proves their theory to have no foundation at all.

At the bottom of page 19 of Professor Steele's "Fourteen Weeks' Course in Geology" he adds a foot-note, in which he says that the word "day" is *of course* considered not as a literal day, but is symbolical of a long period of time,—ages during which God was fitting this earth as a home for man. He quotes Augustine, in the fourth century A.D., as having called the days of creation "ineffable days," and describes them as "alternate births and pauses in the work of the Almighty," "the boundaries of periods in the vast evolution of the world."

With due respect to Professor Steele, in rendering the

opinion of Augustine as to the days of the creation, we think that he may perhaps have misunderstood the meaning of Augustine when he said that the days of the creation were "ineffable days," the meaning of which is that they are unutterable, not to be expressed; in which opinion every true believer can concur, be he Christian or Jew. Had Augustine declared them different from what Moses called them,—viz., "And the evening and the morning," meaning a day of twenty-four hours as we now understand it,—the Roman Catholic church would have pronounced him a heretic, and he would never have been known in the Roman Catholic church nor to the world as St. Augustine. They would not have allowed him to misconstrue the account as given by Moses, nor can we see any reason why they should, because the science of geology with its hypothetical ideas was not promulgated at that time. There is no doubt that St. Augustine desired to give expression to the days of the creation in the superlative degree, which we consider yet not equal to their importance.

And we further regard the six days mentioned in Exodus, Chapter XXIV., verse 16, as being days of twenty-four hours each, in which it says, "And the glory of the Lord abode upon Mt. Sinai, and a cloud covered it *six days*, and on the *seventh day* he called unto Moses out of the midst of the cloud." We do not believe St. Augustine would advance any argument different from what Moses has here written.

CHAPTER VI.

Let the Waters bring forth, etc.—Let the Earth bring forth the Living Creature, etc.—He created Man, etc.—Adam Named the Animals.

We will now introduce our object-lesson descriptive of the creation of the fifth day.

God also said, "Let the waters bring forth the creeping creature having life, and the fowl of the air that may fly over the earth under the firmament of heaven.

"And God created the great whales, and every living and moving creature, which the waters brought forth according to their kind, and every winged fowl according to its kind; and God saw that it was good.

"And he blessed them, saying, Increase and multiply and fill the waters of the sea, and let the birds be multiplied upon the earth.

"And the evening and the morning were the fifth day."

By examining the creation as described by Moses, in our object-lesson, we find the description given agrees exactly.

"Let the waters bring forth the creeping creature having life." We see reptiles and aquatic animals, of many varieties and species, inhabiting the waters and land, as seemeth to please them best, in all parts of the globe.

"And the fowl of the air that may fly over the earth

THE EARTH.

Illustrating the Creation of the fifth day, when the waters were filled with the "creeping creature having life," and the "great whales," and also the fowls that might fly over the earth under the firmament of heaven. (See page 47.)

under the firmament of heaven." That description, given by Moses, agrees exactly with what we see every day.

To the lover of nature nothing can be more pleasing than to listen to the birds warbling their songs in praise of their Creator, in early morn in the boughs of the forest-trees. In our latitude we hail the approach of spring, and love to see the feathered songsters return, to add new pleasures and delights after we have passed a dreary winter.

"And God created the great whales, and every living and moving creature which the waters brought forth."

Is not that description by Moses in accordance with what we see every day? It is true the creation of the fifth day, though vast and diversified, and wonderful within itself, does not seem of as vast magnitude as the sun and planetary system, from the fact that we see the creation of the fifth day, and are acquainted more familiarly with it, and can comprehend his works of that day with more accuracy than the creation of the fourth day when the planetary system was created.

But the naturalist will find enough to engage his attention for a lifetime, by examining the creatures which were created that day, without anything else. But what great wisdom God shows, by having created the waters and the firmament first, for the home, support, and sustenance of those creatures already named. Well might St. Augustine have considered those days "ineffable days."

We will now introduce our sixth object-lesson.

And God said, "Let the earth bring forth the living creature in its kind, cattle, and creeping things, and beasts

THE EARTH.

Illustrating the Creation of the sixth day, when beasts that roam over the earth were created, and, last of all, man, to have dominion over them.

(See page 49.)

of the earth according to their kinds: and it was done. And he said, Let us make man to our own image and likeness, and let him have dominion over the fishes of the sea, and the fowls of the air, and the beasts, and the whole earth, and every creeping creature that moveth upon the earth wherein there is life."

"And God created man to his own image, to the image of God he created him; male and female he created them."

"And God blessed them, saying, Increase, and multiply, and replenish the earth, and subdue it; and rule over the fishes of the sea, and the fowls of the air, and all living creatures that move upon the earth. And God said, Behold, I have given you every herb bearing seed upon the earth, and all trees that have in themselves seed of their own kind, to be your meat; and to all beasts of the earth, and to every fowl of the air, and to all that move upon the earth and wherein there is life, that they may have to feed upon." And it was so done.

"And God saw all the things that he had made, and they were very good. And the evening and morning were the sixth day. Thus the heavens and the earth were finished, and all the furniture thereof."

Here, again, we see an important work done on the sixth day, but not as important as the creation of the first four days of the creation, because the whole of the creatures created on the sixth day had to subsist on what was previously created for their use.

Man, having been created in the likeness and image of God himself, must be considered intellectually by far

superior to all others of animated creation. God gave him power to rule over all living creatures, and to subdue them; and, in order that he might become more familiar with them, God brought them to Adam to see what he would call them.

"For whatsoever Adam called any living creature, the same is its name even to this day."

It is not mentioned by Moses, in the account which he gives us of the creation, whether Adam was created nude, or whether he was provided with a covering of hair, like other animals of the lower order of creation, to suit climatic conditions, which is a matter for naturalists to decide. It must be observed the Bible is not written as a book detailing historical events, any more than it is a book containing the statutes for the governing of mankind. What historical information we get through him is correct, but he says nothing whatever regarding the clothing or covering of animals of any kind.

It may be observed, however, that *man* of that day, when he was deceived, got his "eyes opened," and was a victim of misplaced confidence, the same as man of the present day.

We have thus briefly outlined the work of the sixth day, and will now proceed to the seventh.

"And on the seventh day God ended his work which he had made; and he rested on the seventh day from all his work which he had done.

"And he blessed the seventh day, and sanctified it: because in it he had rested from all his work which God

created and made," thus setting an example to Adam and his posterity to do likewise.

Whether the foregoing account is true as Moses details it in the first chapter of Genesis, or whether we are to believe an idea formulated by our scientific men of the present day, and ignore the Mosaic account, is a question to be decided.

If our children are educated to disbelieve the first chapter of the Bible, why should they not disregard the entire work?

We think we have adhered strictly to the text and fully supported the Mosaic account by the aid of science, and will now endeavor to explain a question which has always been a mystery to the ancients as well as to ourselves.

CHAPTER VII.

Fire in the Centre of the Earth—The Diamond the Product of Crystallized Carbon—The Earth not in an Entire Molten Condition at its Centre—Volcanoes—Earthquakes.

MODERN geologists advance but one theory regarding heat in the centre of the earth, which is this:

"In that far-off beginning it was in an igneous condition; that while in that condition it shone as do now the sun and fixed stars. In process of time it cooled from a gaseous to a liquid form. Its atmosphere comprised not only the gases that compose our present atmosphere, but all the oxygen and carbon now locked in the rock and coal masses of the earth. . . . The surface, arid and burning, bristled with ragged eminences, or was furrowed with enormous clefts and cracks. But the earth had ceased to shine as a star, and henceforth was itself to be lighted and at last heated by other bodies," and, according to their theory, "has been cooling ever since," although they are honest enough to advance the foregoing as a hypothesis only, and are willing to give the reader the benefit of the doubt.

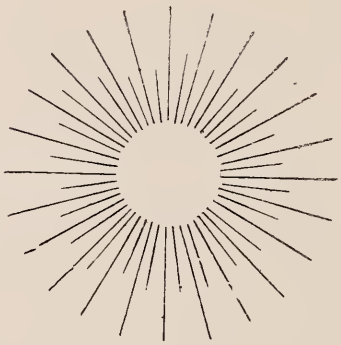
We take exceptions to their hypothesis, from the fact that, if the earth were to have passed through that igneous

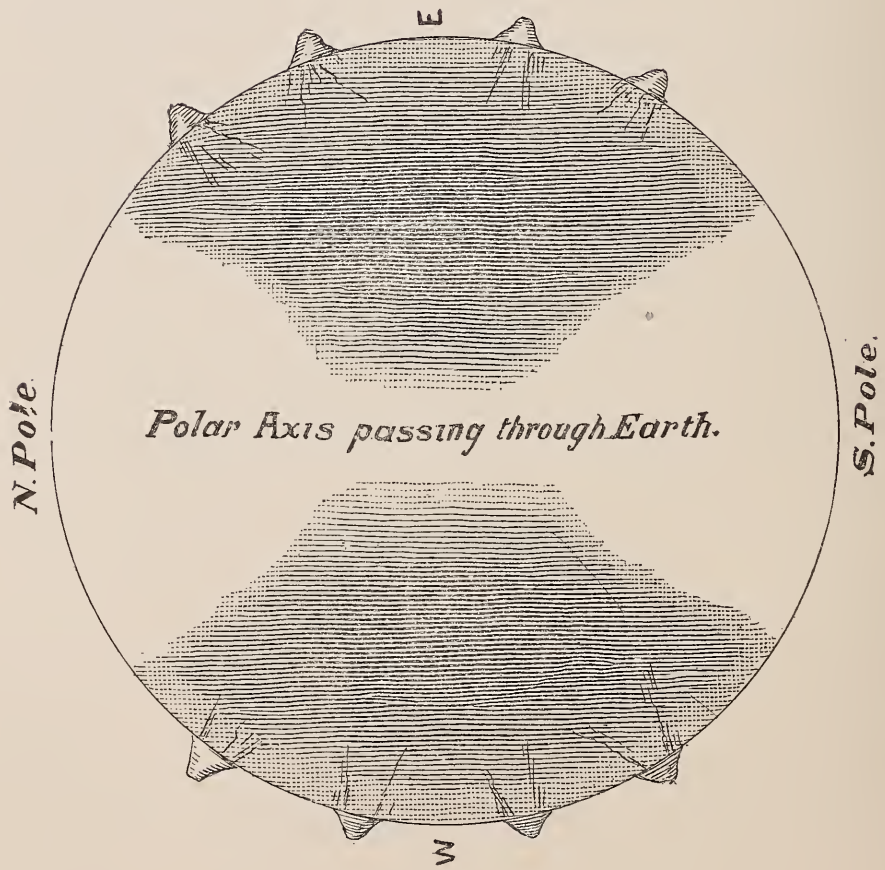
ordeal, all metallic and mineral substances would have been found to-day in one homogeneous mass, except coal, which is the diamond in its embryotic formation.

We believe all minerals to be of antediluvian formation, except those having carbon for their base, such as graphite, coal, diamonds, etc., etc., which came into existence by timber and vegetation being deposited by the deluge, as Moses describes it, which may be termed minerals of post-diluvian formation. This, I think, should satisfy the mind of every intelligent being as to the igneous condition of the earth.

How such an idea could be advanced in this enlightened century and be taught at the present day is incomprehensible. Although it is gratifying to us to be told that the earth is gradually cooling in place of being consumed by internal fire, I will now advance an idea which seems to be a more likely solution of the cause of fire in the interior of the earth.

In the first place, there is no fire in the centre of the earth, and never has been. But mineral substances, such as sulphur and phosphorus, are deposited in the earth, and form an important element in its composition, which combining in the earth under a tropical sun, which passes over the Sahara, or great desert, for a distance of two thousand eight hundred miles, due east and west, and the Arabian Desert, seven hundred miles, due east and west, on which it never rains, and not even a cloud passes under the sun to obscure its rays from the scorching sand, together with a velocity of the earth at the equator equal to a




E
N. Pole.
Polar Axis passing through Earth.
S. Pole.
W

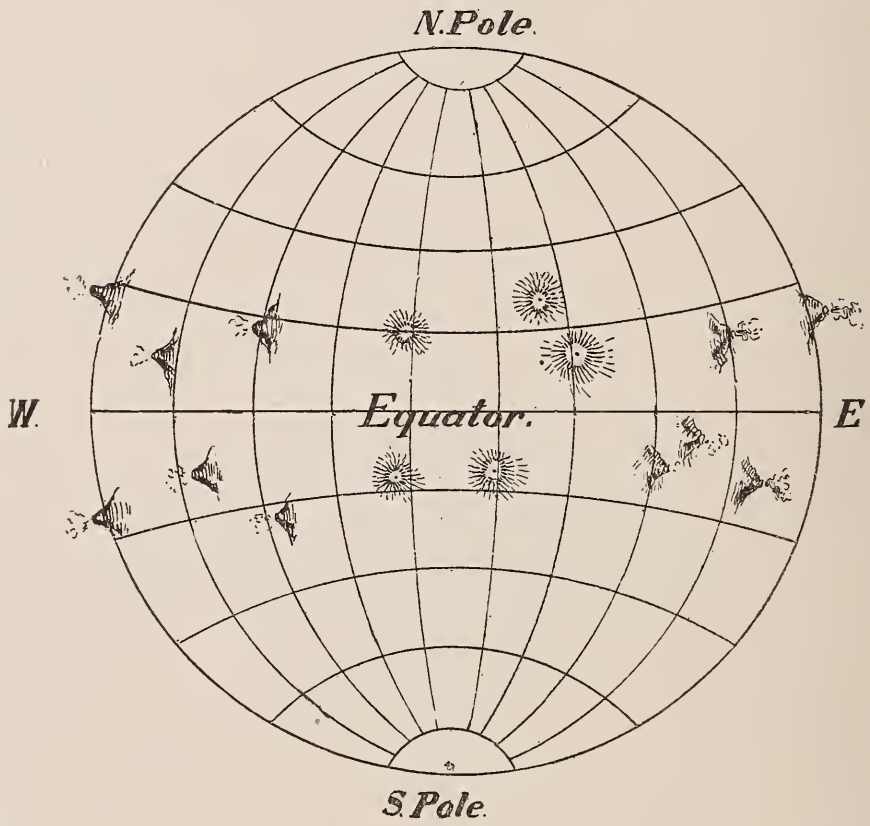
speed eighteen times as rapid as that of a railroad express train, all tend to generate heat in the earth through spontaneous combustion. We know nothing is more combustible than phosphorus, even if it is deposited in small quantities, and all volcanoes emit large amounts of sulphur even after they have seemingly become extinct.

The heat thus generated increases to an unknown depth, as shown in our object-lesson, and then decreases as it nears the centre of the earth, because the imaginary polar line, passing through the centre of the earth, is a point wherein the earth is supposed to be at rest, thereby having no motion, or solar rays, to generate heat in its centre.

In proof of this theory being correct, we have but little evidence of volcanic action before the flood, from the fact of the earth having been a new earth, and had only begun to generate heat, until the waters of the great deep covered it up. Sir Robert Ker Porter says he visited Mount Ararat, in Armenia, in A.D. 1820, and saw large quantities of eruptive matter lying around the base of said mountain, giving evidence of its having been in an igneous state in its interior prior to the flood, but none of the inhabitants had any knowledge whatever of its having been in an igneous condition since the deluge.

It is also worthy of observation that nearly all of our volcanoes and geysers are in the equatorial regions except Mount Hecla, which is in Iceland; thus proving that our theory of the earth generating heat under a scorching sun is correct.

By examining the accompanying illustration, it will be observed that nearly all the volcanoes lie within thirty degrees north and thirty degrees south of the equator.



These volcanoes act as safety-valves to allow the escape of a superabundance of heat, which may at any time develop itself in the earth. Were it not that nature has provided such means of escape, earthquakes would be more numerous than they are.

In order that we may judge of the velocity of the earth at the equator, we "will imagine ourselves standing in the

city of Quito, built on the high ridge midway between the poles. Men, houses, spires, trees, everything in it, are whirling round with such swiftness that they sweep over nearly seventeen miles in a minute. Everything on the great thick girdle of the earth is whirled round equally quick; and ever since the ancient Babylonians watched the risings and settings of the heavenly bodies from the top of the Temple of Baal down to the present time, the length of the day has not changed so much as a second." Although everything at the equator is whirled around at the rate of more than a thousand miles an hour, the rate is not the same in other parts of the earth. At the nearest point to the north pole which man has yet reached, hills, icebergs, plains, and seas are all travelling eastward only about as fast as an express railway train.

The nearer you get to either the north or the south pole the less motion the earth has. Having a knowledge from the foregoing of the earth's formation and composition, and it being at all times subjected to the burning rays of a tropical sun, which of itself would be sufficient to generate vast quantities of internal heat, and augmented by its rapid motion, the problem of fire at the centre of the earth is easily solved.

If it were as our professors teach, that the earth had a crust of only fifty miles in thickness, and the remaining seven thousand nine hundred miles of its diameter were yet in a molten condition, with vast bodies of water pouring through it, would not that chaotic condition of nature still be enacted which they so vividly picture as its first condi-

tion, when in an igneous state, "in that far-off beginning," when the waters would come in contact with the fire and immense volcanic eruptions would take place, piling up mountain ranges as they claim they did before? Although there are over three hundred volcanoes on the surface of the earth at present, comparatively few of them are in active operation at one time.

We believe that if the whole interior of our earth was in one molten mass, and a body of water came in contact with it, that soon this "earthly tabernacle would be dissolved," and all things terrestrial would be no more.

I will here insert an article from the *Scientific American* of September 27, 1890.

"NEW ALEUTIAN VOLCANO.

"Every vessel from the Aleutian Islands arriving at San Francisco nowadays reports the liveliest sort of doings along that volcanic chain. The subterranean energies that are incessantly seeking a means of escape to the surface have massed their forces along that line of volcanic vents, and are making a display of pyrotechnic brilliancy and awful energy that is seldom seen anywhere. It is now reserved for a very few spectators, most of whom are badly frightened by the exhibition.

"Volcanoes that have not smoked for many years have suddenly become flaming chimneys, connecting with the molten regions beneath our feet. The grandest spectacles and the most remarkable phenomena are connected with

New Bogoslov, which reared its head above the waters about eight years ago. . . . Old Bogoslov was puffing away with other volcanoes when Levasheff discovered it one hundred and twenty-two years ago; but ten years later, when Cook passed within seventeen miles of it, it was quiet. . . . In February, this year, the new island with its little craters illuminated the arctic winter for many miles around.

"The night was almost as light as day, except when clouds of pumice dust filled the air. It can be readily imagined, therefore, that a perfectly enormous quantity of ashes and débris have found exit through the crater or craters at the bottom of the ocean.

"It is estimated that on February 22 the ashes from New Bogoslov rose to a height of about five miles, and the column of smoke, a dense black pillar, was computed to rise fifteen miles in the air. Such a sight as this is seldom witnessed in any part of the world."

I will not attempt to give the reader a general account of the volcanoes now in active eruption, but will refer him to an interesting work by Mungo Ponton, F.R.S.E., entitled "Earthquakes and Volcanoes: Their History, Phenomena, and probable Causes."

Now what causes these spasmodic eruptions? Is it not heat which is generated in the earth, by turning on its axis with such terrific velocity, which seeks an outlet? Earthquakes in like manner are more frequent in the equatorial regions than elsewhere.

I am supported in the aforesaid view of volcanoes by

Mungo Ponton in his admirable work, on page 343, where he says:

"Volcanoes, again, may be regarded as safety-valves, which tend very considerably to mitigate the violence of the underground forces, by providing a way of escape for the elastic vapors that are generated or set free."

CHAPTER VIII.

The Genealogy and Age of the Patriarchs from the Creation to the Flood—The Garden of Eden—Giants were upon the Earth—Stump of Tree in Cincinnati—Land Connection between the two Continents.

HAVING considered the interior of the earth, I will now speak of the earth's surface, or crust, as our geologists term it.

It is not my intention to take cognizance of the spiritual condition of man,—that I will leave with theologians for the present,—but only to affirm the account of the creation as given by Moses.

In Genesis, Chapter I., verse 27, it says,—

"And God created man in his own image, to the image of God he created him; male and female he created them.

"And God blessed them, saying, Increase and multiply, and fill the earth, and subdue it; and rule over the fishes of the sea, and the fowls of the air, and all living creatures that move upon the earth."

That command, "increase and multiply," we see literally fulfilled, and through that we are enabled to reckon the time which passed from the creation to the flood.

Through the genealogy and age of the patriarchs from

Adam to Noah, at the birth of their sons, we get the exact time required.

In the fifth chapter of Genesis, commencing with the third verse, we read as follows:

Adam lived 930 years, and at the age of 130 years begat Seth. Seth lived 912 years, and at the age of 105 years begat Enos. Enos lived 905 years, and at the age of 90 years begat Cainan. Cainan lived 910 years, and at the age of 70 years begat Mahaleel. Mahaleel lived 895 years, and at the age of 65 years begat Jared. Jared lived 962 years, and at the age of 162 years begat Henoch. Henoch lived 365 years (and was translated), and at the age of 65 years begat Mathusela. Mathusela lived 969 years, and at the age of 187 begat Lamech. Lamech lived 777 years, and at the age of 182 years begat Noah. Noah lived 950 years, and at the age of 600 years entered the ark. Making from the creation to the flood 1656 years.

We have no way of computing the time from the creation to the flood except by the age of each of the patriarchs when each had a certain son born to them, no matter how many children each one had born to them before or afterwards.

Moses has given us a faithful record of a certain favorite son, and the age of that son, again, when he had a son born to him in the same lineal connection, until Noah entered the ark, also of Noah when he entered the ark, which was six hundred years.

It will be observed that Adam's first born was Cain, his second Abel; but sin had entered the world, and Cain slew

Abel, which awful occurrence chronicled the first murder and death in the human race, thus leaving no son to Adam.

The next son born to Adam was Seth, when Adam was one hundred and thirty years old; and the genealogy of our race has been handed down to us as above stated.

I feel anxious to impress the mind of the reader with this very important fact, because at the time of the flood the earth was comparatively new compared with what it is to-day.

Although the mountains were formed on the second day through the pressure of the atmosphere, which I have explained in the creation of the second day, and they possessed all the properties they now possess, but in a partially crystallized form, the sun of only sixteen hundred and fifty-six years, in place of six thousand years (as now), had been shedding its rays on the face of the earth, and heat, in all probability, had not generated to any great extent in the earth, thereby causing but little volcanic action.

Granite, quartz, and all mineral-bearing rocks were among the first to crystallize; in fact, all of the above named are of antediluvian origin.

I will now give a partial account of the time from the creation to the flood, or the antediluvian period as it is called.

In Genesis, Chapter II., verse 8, "And the Lord God planted a garden eastward in Eden; and there he put the man whom he had formed.

"And out of the ground made the Lord God to grow every tree that is pleasant to the sight and good for food. And a river went out of Eden to water the garden, and from thence it was parted and became into four heads.

"The name of the first is Pison; that is it which compasseth the whole land of Havilah, where there is gold. And the gold of that land is good; there is bdellium and the onyx stone."

It is particularly noticeable that Moses speaks of gold, bdellium, and the onyx stone, but not of diamonds, simply because they had not yet formed. Although the deluge had visited the earth about nine hundred and sixty-five years before Moses wrote Genesis, and engulfed forests of timber forming the base of carbon, yet we are of the opinion that diamonds had not yet crystallized from carbon at that period of the world's history.

There is no doubt that the earth was densely covered with vegetation before the flood; that forests were more dense in their virgin condition; that trees grew to enormous size, and were swept down by storms, and others grew by the sides of their fallen trunks, forming impenetrable forests, such as are not known now except in Georgia, California, Oregon, and the great northwest section of the United States.

The great amount of timber and vegetation prior to the flood no doubt had much to do with the physical development of man.

Moses says in Genesis, Chapter VI., verse 4, "Now giants were upon the earth in those days."

It is likely the generality of men before the flood were of a gigantic stature in comparison to what they are now. But these here spoken of, called giants, were not only tall in stature, but violent and savage in their dispositions, and were monsters of cruelty and lust. They no doubt dwelt in tents in the forests, under tribal regulations, and did not labor mentally or physically as we do, thereby prolonging their lives for a greater length of time; although we must admit that the western hemisphere, or new world, as it is called, was peopled with a race who understood the arts, perhaps, as well as we of the present day, from the following, which the writer has copied from a work entitled, "American Antiquities and Discovery of the West," by Josiah Priest.

"A gentleman who was living near the town of Cincinnati, in 1826, on the upper level, had occasion to sink a well for his accommodation, who persevered in digging to the depth of eighty feet, without finding water, but, still persisting in the attempt, his workmen found themselves obstructed by a substance which resisted their labor, though evidently not stone.

"They cleared the surface and sides from the earth bedded around it, when there appeared the *stump* of a tree, three feet in diameter and two feet high, which had been cut down with an axe. The blows of the axe were yet visible. It was nearly of the color and apparent character of *coal*, but had not the friable and fusible quality of that substance. Ten feet below, the water sprang up, and the well is now in constant supply and high repute.

"Reflections on this discovery are these: 1st. That the tree was undoubtedly antediluvian. 2d. That the river now called the Ohio did not exist anterior to the deluge, inasmuch as the remains of the tree were found firmly rooted in its original position, several feet *below* the bed of that river. 3d. That America was peopled before the flood, as appears from the strokes of the axe in cutting down the tree. 4th. That the antediluvian Americans were acquainted with the use and properties of iron, as the rust of the axe was on the top of the stump when discovered."

According to this opinion, it would appear that in the very first period of time men were acquainted with the metals, and as they diverged from the common centre, which was near the Garden of Eden, in Asia, they carried with them this all-important knowledge. If the stump is, indeed, antediluvian, we learn one important fact, and this is it: America, by whatever name it was known before the deluge, was then a body of earth above the waters, and also was connected with Asia, where it is allowed, on all hands, man originated.

If it were not connected with Asia, it might be inquired how then came men in America before the flood, the traits of whose industry and agricultural pursuits are discovered in the felling of this tree, as well as a great number of other instances.

In Morse's "Universal Geography," first volume, page 142, the discovery of the stump is corroborated.

"In digging a well in Cincinnati, the stump of a tree was found in a sound state, ninety feet below the surface;

and in digging another well at the same place, another stump was found, at ninety-four feet below the surface, which had evident marks of the axe; and on its top there appeared as if some iron tool had been consumed by rust. The axe had no doubt been struck into the top of the stump, when the horrors of the deluge first appeared, in the bursting forth of the waters from above, from the windows of heaven." The fact of those two stumps being found at a depth of ninety feet below the surface, and the remains of an axe found, prove that America was inhabited prior to the deluge.

But from whence came those inhabitants? The eastern and western continents are to-day divided by such vast oceans, and Asia being the country where man had his origin, the descendants of Adam must have understood navigation prior to the flood, or how could man have found a home in America? That question can be solved by quoting from different authors in "American Antiquities." The same solution will hold good respecting the peopling of the American continent after the flood, by a race, or races, who were the descendants of Noah, who built some remarkable works, and who afterwards degenerated into a savage state and were known as our American Indians. The account is a lengthy one, but the reader may be recompensed by perusing it. It is thus given:

"If the supposition of naturalists may obtain belief, there has been a whole continent, reaching from the north of Europe to Behring's Strait, uniting not only Europe with America on the east, but also Asia on the north, and may

have continued on south from Behring's Strait some way down the Pacific, as Buffon partly believed, uniting America and China on the west. It was contended by Clavigero that the equatorial parts of Africa and America were once united, by which means, before the connection was torn away by the eruption of the sea on both sides, the inhabitants from the African continent came in the earliest ages to South America. Whether this be true or not, the two countries approach each other in a remarkable manner, along the coast of Guinea, on the side of Africa, and the coast of Pernambuco, on the side of South America. These are the places which, in reality, seem to stretch towards each other, as though they had been once united.

"The innumerable islands scattered all over the Pacific Ocean, populous with men, *more* than intimates a period, even since the flood, when all the different continents of the globe were united together, and the sea so disposed of that they did not break this harmony so well calculated to facilitate the migrations of men and animals. Several tribes of the present southern Indians, as they now are called, have traditions that they came from the *east*, or through the Atlantic Ocean."

"Rafinesque says it is important to distinguish the American nations of eastern origin from those of northern. The latter, he says, were invaders from Tartary, and were as different in their manners as were the Romans and Vandals." The southern nations, among whom this tradition is found, are the Natchez, Appalachians, Talascas, Mayans, Myhizcas, and Haytians. But those of the

Algonquin stock point to a northwest origin, which is the way from the northern regions of Asia.

It is not likely that immediately after the era of the deluge there was as much ocean which appeared above ground as at the present time; but, instead of this, lakes were more numerous. Consequently on the surface of the globe there was much more land than at the present time. But from various convulsions, more than we have spoken of, whose history is now lost, in past ages, many parts—nay, nearly *all* the earthly surface is sunken to the depths below, while the waters have risen above; nearly three-fourths of the globe's surface at this time is known to be water. How appalling is this reflection! The currents of oceans, running through the bowels of the earth, by the disposition of its Creator, to promote *motion* in the waters, as motion is essential to all animal life, have, doubtless, by subterranean attrition affected the foundations of whole islands, which have sunk beneath the waters at different periods.

To such convulsions as these, it would seem Job has alluded in Chapter IX., verse 5, as follows: "Which removeth the mountains, and they know not; which overturneth them in his anger." Adam Clarke's comment on this verse is as follows: "This seems to refer to earthquakes. By these strong convulsions, mountains, valleys, hills, even whole islands, are removed in an instant; and to this latter circumstance the words 'they know not' most probably refer." It can scarcely be supposed but Job was acquainted with occurrences of the kind, in order to justify

his remark of such occurrences as being done by God in his anger.

It is not impossible that the fact upon which the following story is founded may have been known to Job, who was a man supposed to be in possession of every species of information calculated to interest the nobler faculties of the human mind, if we may judge from the book bearing his name. The story is an account of a certain island, called by the ancients *Atlantis;* and, as all learning uninspired and general information was *anciently* in possession of *heathen* philosophers and priests, to whom it was the custom even for princes to resort before they were considered qualified to sit on the thrones of their fathers, we are inclined to credit the account as it is given by one of those characters. Such were the Egyptian priests to the Egyptians, the Druids to the Celtic nations, the Brahmins to the Hindoos, the Magi to the Persians, the philosophers to the Greeks and Romans, and the prophets of the Indians to the western tribes.

This island is mentioned by Plato in his dialogue of "Timæus." Solon, the Athenian lawgiver, is supposed to have travelled into Egypt about six hundred years before Christ. Plato's time was three hundred years later; he has mentioned the travels of Solon in Egypt. He arrived at an ancient temple on the Delta, a fertile island formed by the Nile, where he held a conversation with certain learned priests on the *antiquities* of remote ages, when one of them gave Solon a description of the island Atlantis, and also of its destruction.

"This island," said the Egyptian priest, "was situated in the western ocean, opposite the strait of Gibraltar," which would place it exactly between a part of Europe, its southern end, and the northern part of Africa and the continent of America. "There was," said the priest, "an easy passage from this to other islands, which lay adjacent to a large continent exceeding in size *all* Europe and Asia." Neptune settled in this island, from whose son *Atlas* its name was derived, and divided it between his ten sons, who reigned there in regular succession for many ages.

From the time of Solon's travels in Egypt, which was six hundred years before Christ, we find more than seventeen hundred years up to the flood; so that time enough had elapsed since the flood to justify the fact of the island having existed, and also of having been inhabited and destroyed even six hundred years before the time of Solon; which would make the time of its destruction twelve hundred years before Christ, and would still leave more than five hundred years from that period back to the flood. So that, if King Neptune had not made his settlement on the island Atlantis till two hundred years after the flood, there would have been time for the successive reigns of each of the regal lines of his sons, amounting to three hundred years, before the time of its envelopment in the sea. So that the Egyptian priest was justified in using the term *antiquities* when he referred to that catastrophe.

"The Atlantians made invasions into Europe and Africa, subduing all Libya as far as Egypt, Europe, and Asia Minor. They were resisted, however, by the Athenians,

and driven back to their Atlantic territories." If they were resisted and driven back by the Athenians, the era of the existence of this island is easily ascertained, because the Athenians settled in Athens, in Greece, fifteen hundred and fifty-six years before Christ, being a colony from Egypt under their conductor Cecrops. One hundred years after their establishment at Athens they had become powerful, so as to be able to take a political stand among the nations of that region, and to defend their country against invasions. Accordingly, at the time the Atlantians were repulsed and compelled to return from whence they came was fourteen hundred and forty-three years before Christ, or nearly so."

"Shortly after this," says Plato, "there was a tremendous earthquake, and an overflowing of the sea, which continued for a day and night, in the course of which the vast island of Atlantis, with all its splendid cities and warlike nations, was swallowed up and sunk to the bottom, which, spreading its waters over the chasm, added a vast region of water to the Atlantic Ocean. For a long time the sea was not navigable, on account of rocks and shoals of mud and slime, and of the ruins of that drowned country."

CHAPTER IX.

Other Land Connections, Islands of which yet Remain—Man Supposed to have Crossed from Asia to America—Noah Commanded to Build the Ark—Drifts of Tropical Animals and Vegetation to Siberia.

At the period, therefore, of the existence of this island, a land passage to America from Europe and Africa was practicable; also by other islands, some of which are still situated in the same direction,—the Azores, Madeiras, and Teneriffe islands, about twenty in number.

For this story of the island Atlantis we are indebted to Irving's "Columbus," a popular work when published; which account cannot be denied, but is exceedingly curious, and not without foundation of probability. Was not this island the Bridge, so called, reaching from America to Europe, as conjectured by Dr. Robertson, the historian, which was destroyed by the ocean, as he supposes, very far back in the ages of antiquity? And allusion to this same island Atlantis is made by Euclid, who flourished about three hundred years before Christ, in a conversation which he had with Anacharsis, a Scythian philosopher of the same age, who had, in search of knowledge, travelled from the wilds of his own northern regions to Athens, where he became acquainted with Euclid.

Their subject was the convulsions of the globe. The sea, according to every appearance, said Euclid, has separated *Sicily* from *Italy*, *Eubœa* from *Bœtia*, and a number of other islands from the continent of Europe. We are informed, continued the philosopher, that the waters of Pontus Euxinus (or the Black Sea), having been long enclosed in a basin or lake, shut in on all sides, and continually increasing by the rivers of Europe and Asia, rose at length above the highlands which surrounded it, forced open the passage of Bosphorus and Hellespont, and impetuously rushed into the Ægean or Mediterranean Sea. We are told that *Hercules*, whose labors have been confounded with those of *nature*, separated Europe from Africa, by which is meant, no doubt, that the Atlantic Ocean destroyed the *isthmus* which once united those two parts of the earth, and opened itself a communication with the Mediterranean Sea. "Beyond the isthmus of which I have just spoken," said Euclid, "existed, according to ancient traditions, an island as large as Africa, which, with all its wretched inhabitants, was swallowed up by an earthquake."

In considering this subject further, it is worthy of notice that the earth in its pristine formation was not as subject to internal convulsions as it has been at a later period, for, says Solon, "The Island of Atlantis was not destroyed by earthquakes until twelve hundred years before Christ, which was nearly three thousand years after the creation, and over thirteen hundred years after the flood." If, then, as our geologists assert, this earth was at one time in an igneous

condition, and has been gradually cooling off ever since, why did that isthmus remain which connected the two continents together for three thousand years, to be afterwards destroyed by an earthquake? Does it not prove an increase of heat in the earth? If the earth had been and is still cooling, that connection between the two continents would be even more perfect to-day than it was when it came into existence.

That island or isthmus known as Atlantis existed at the time of the flood, which would have provided means for the descendants of Adam to have emigrated to America from Asia, where man was originated; and the theory is advanced by some learned men that Noah himself dwelt in America and there built the ark, because we are told that it "moved on the face of the waters," and no doubt returned to Asia, where it rested on Mount Ararat, to repeople the world. But that is by no means definitely known. We see by the foregoing that it establishes the fact that man had his origin from one source only, and that was Adam, who through guile had sinned, and brought destruction on all living creatures except Noah and his posterity and such animals as he was directed to take into the ark with him.

For it is written (Genesis, Chapter VI., verse 5), "And God saw that the wickedness of man was great upon the earth, and that every imagination of the thoughts of his heart *was* only evil continually.

"And it repented the Lord that he had made man upon the earth, and it grieved him at his heart.

"And the Lord said, I will destroy man whom I have created, from the face of the earth; both man, and beast, and the creeping thing, and the fowls of the air; for it repenteth me that I have made them.

"But Noah found grace in the eyes of the Lord."

"And God said unto Noah, The end of all flesh is come before me; for the earth is filled with violence through them: and, behold, I will destroy them with the earth.

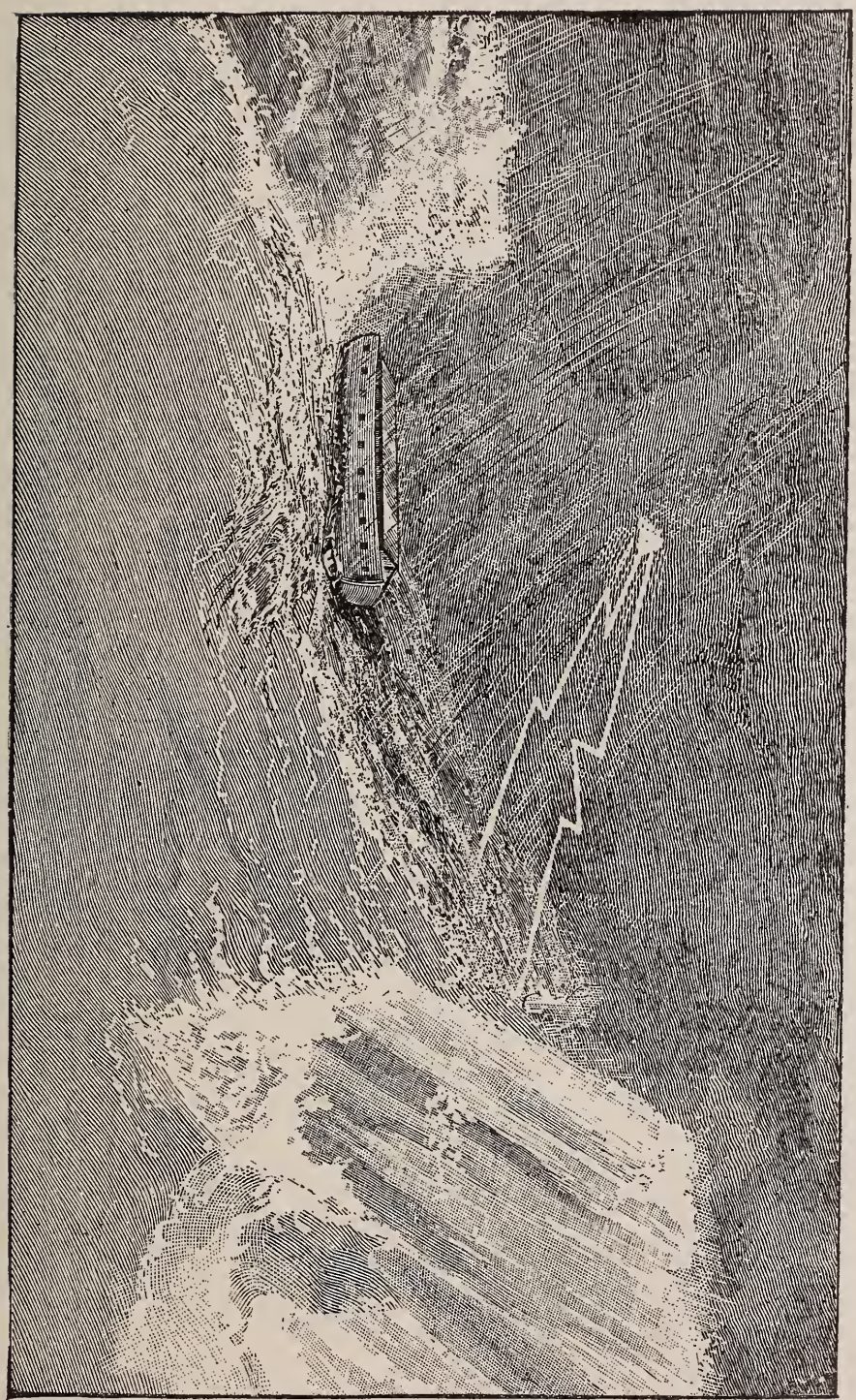
"And God commanded Noah saying, Make thee an ark of gopher-wood; rooms shalt thou make in the ark, and shalt pitch it within and without with pitch.

"And this is the fashion which thou shalt make it of: The length of the ark shall be three hundred cubits, the breadth of it fifty cubits, and the height of it thirty cubits," —which, according to the measure in general use at the present day, would be five hundred and forty-seven feet long, ninety-one feet wide, and fifty-four feet high.

"And, behold, I, even I, do bring a flood of waters upon the earth, to destroy all flesh, wherein is the breath of life, from under heaven; and everything that is in the earth shall die."

"For yet seven days, and I will cause it to rain upon the earth forty days and forty nights; and every living substance that I have made will I destroy from off the face of the earth."

Thus the edict had gone forth. The doom of all living was fixed. Noah and his family entered the ark and gathered in what God had commanded. An aqueous vapor rose. Clouds gathered. The sky was darkened,



THE FLOOD.

(See page 78.)

even to blackness. Lightnings flashed over the entire heavens. Thunder shook the earth. Large forest-trees were wrenched from the earth. Terror seized all living. Mankind, to whom Noah had preached and urged to repentance for one hundred and twenty years, were seized with terror, knowing God's wrath was upon them. The lion sprang from his lair, and uttered a solemn requiem to all animal creation, feeling instinctively that their destruction was at hand. Storm after storm swept the earth. Incessant cloud-bursts followed each other in quick succession. Mighty masses of water rolled over the earth, deluging all things terrestrial. The artillery of heaven played as never before. And soon all animal creation, wherein "was the breath of life," suffered the penalty which awaited them.

But Noah, who was righteous before God, remained secure, for God had shut him in by an angel, besmearing the outside of the door with pitch, while Noah did the same inside. That craft, that contained the cargo which was again to populate the globe, which was commanded by Noah and piloted by God himself, was the first and only craft that ever put to sea with a full assurance of a safe voyage. Did underwriters live at that day, their services would have been quite unnecessary.

"And the waters prevailed beyond measure upon the earth; and all the high mountains under the whole heaven were covered.

"Fifteen cubits upwards did the waters prevail; and the mountains were covered."

A cubit is 1.824 feet, which is about one foot and ten inches, so that the mountain-tops were covered twenty-seven feet deep. It would be reasonable to suppose the waters to have been nearly three miles in depth, which I will presently prove by a deposit of detritus near Norristown, Pennsylvania.

The waters of the deluge, some writers assert, ran from west to east around the entire globe, through natural causes which they advance. Undoubtedly this was not the case. There is no reason to suppose that their courses were changed. We believe the same laws which govern the flow of streams and oceans to-day governed them then. There is unmistakable evidence that the waters through the eastern portion of Pennsylvania ran from the Allegheny Mountains towards the Delaware Bay. We have undeniable evidence that the waters of the flood ran exactly in the same direction that the Schuylkill River now runs, which we will presently prove, although the Schuylkill River, at the point which I will refer to presently, runs in a south-easterly direction.

It must be remembered that this devastation and destruction visited the earth when it was yet new, as compared with what it now is. Although the waters surrounded the entire globe on the first day of its creation, still its earthy composition was not as solid as it was after the "breaking up of the great deep," and the repacking of its outer surface through the agency of a deluging flow of water for the space of one year. The sun of only sixteen hundred and fifty-six years had shone on its surface, to

crystallize its rocks, instead of six thousand years, as at this time. Were that same calamity to befall the earth to-day, the earth's surface would present less evidence of such a vast change than it now presents. Mineral substances then were in but a partially crystallized condition ; only rocks of the earliest formation had crystallized, such as the different species of granite, quartz, and the gray sand-rock of the inner formation of the earth. The body of the earth was not solidly packed, as we see it to-day.

We sink shafts into the earth to the depth of two thousand feet now, and find deposits of timber which has turned into coal, which proves that the earth's solidity then was not as now. We find rocks such as granite, and rocks containing small quantities of iron, also rocks of a mixture of gneiss and flint-like substances, all of antediluvian formation. But such rocks that contain fossils, of the magnesian or limestone varieties, or any kinds of stone whatever containing fossils, or the different kinds of freestone, green sand, or serpentine stone (so called), coal, slate, plumbago, marl, etc.,—such stone or mineral deposits are all of post-diluvian formation. It is true there are at all times timber and sand of various kinds drifting down the rivers to the ocean, but such drifting material could not be relied on as forming any such deposits, in any length of time, as are now found deposited in the coal-fields of Pennsylvania, and in every country on the face of the earth. In many parts of the earth the deposits are found in a different state of transformation. In Ireland peat is taken out of the bogs with spades, which when dried burns freely, in consequence

of its being a vegetable deposit, occasioned by the deluge, which we will speak of in future.

We are told by our geologists that large quantities of fossil remains of animals, such as are indigenous to tropical climates, and also tropical vegetation, with the fossils, are locked up in the north polar regions, thus proving, as they say, that the polar regions have shifted, or, in other words, that those regions which now are ice-bound were once of a tropical temperature. We can see no reason whatever why tropical vegetation and the bones of tropical animals may not have drifted to the north pole. We know that the tides run north and south from the equator, and, if the waters covered the earth three miles in depth, the tides were also increased in like manner, which would certainly have carried deposits of animals and vegetation with them in large quantities, from the fact of that depth of water continuing for a period of one year. Would not the same laws that govern the tides to-day have governed them then? Would not the fossils and vegetation of tropical regions be locked at the south pole as well as at the north pole even to this day? And if there had been as warm a climate at the poles then as there is at the equator to-day, would not those tropical animals have decomposed on the surface of the earth, the same as at the equator at the present time, without being covered with beds of frozen sand as now found in Siberia?

The Siberians have sold ivory to the Chinese for hundreds of years, which they dig out of those frozen sand-banks in summer-time.

Here, again, we find our modern geologists laboring to establish a theory by which to prove that the earth has lost its position towards the sun, and that the north polar regions were at one time beautifully covered with a growth of tropical vegetation, and that their forests and jungles teemed with such animals and reptiles as now inhabit the tropical region. Is it not astonishing to see how our educated men try to misdirect the minds of others, and try to prove that this beautiful creation of God, in which he established order *in all things*, should be at one time thrown into disorder, and try to place his works with those of man? They are also laboring hard to prove the "glacial theory," and to point out the fact that large icebergs were common visitants throughout the temperate regions during what they now choose to term the "Glacial Period," thereby trying to prove again that the earth had lost its position towards the sun, or that the sun had lost its power on the face of the earth. This chaotic condition of natural laws seems to serve them a better purpose for establishing clouded theories, on which to build or formulate a science full of deep meaning (as they suppose), to teach rising generations, only to cause complicated theories in our education.

Although the Bible tells us that the ark rested on Mount Ararat, and that the earth was again peopled from Asia, perhaps it would be interesting to give a more full description of the place where Noah and his family disembarked after a voyage of about one year.

CHAPTER X.

Description of Mount Ararat—The Ten Lost Tribes of Israel.

I WILL here copy an account of Mount Ararat from the pen of Sir Robert Ker Porter, who visited it in person in 1820.

"A lofty summit on a range of mountains called Ararat, in Asia, furnished the resting-place of the ark, which contained the progenitors of both man and animals who have replenished the globe since the era of the deluge. Ararat is a chain of mountains running partly round the southern end of the Caspian, and is situated between the Caspian and the Black Seas, in latitute north about 38°, agreeing with the middle of the United States, and is from London a distance of about two thousand four hundred miles in a south-easterly course, and from the Atlantic coast of the State of New York nearly six thousand in an exact easterly direction. On leaving our halting-place where we had rested for the night, a fuller view of the great plain of Ararat gradually expanded before us, and the *mountain* itself in all its majesty began to tower to the very canopy of heaven. We now took a descending position due east over a stony and difficult road, which carried us for more than eight miles, through several close and rocky defiles, till we

reached a small Mahometan village on the side of the Mosschian Hills, where we again halted for the night. On the morning of the 17th we set forth, over a road as bad as that of the day before, in a direction southeast, and gradually descending from a great height, through a very extended sloping country, towards the immense plain of Ararat.

"As the vale opened beneath us in our descent, my whole attention became absorbed in the view before me,—a vast plain peopled with countless villages, and the subordinate range of *mountains* skirting the base of the awful monument of the antediluvian world. I seemed to stand on a stupendous brink in the history of man, uniting the two races of men before and after the flood. But it was not till we had arrived on the flat plain that I beheld Ararat in all its amplitude of grandeur. From the spot where I stood, it appeared as if the hugest mountains of the world had been piled upon each other to form this sublime immensity of earth, rock, and snow. The icy peaks of its double heads rose majestically into the clear and cloudless heavens, from which the sun's rays were reflected in an ocean of light glaring around its summits. This stage of the view united the utmost points of the grandeur of plain and inaccessible mountain height.

"The inhabitants dwelling on the plain around this mountain all unite in reverencing it as the haven of the great ship which preserved the father of mankind from the waters of the deluge."

"The height of Ararat has never yet been satisfactorily

measured; but the best measurements of it were taken by Montieth, of the Madras engineers, from the spot where Porter viewed it, to the highest point of the loftiest head, and it was found to be fifty-five thousand yards, which is full five and a half miles perpendicular altitude. At the distance of about a half-mile from the highest peak, there ascends another horn or point of the mountain, but not as high as the former. In order to produce those two peaks, the mountain a great distance up is divided. Between these two points on the narrow vale, it is believed, the ark rested, as it was impossible that it could have rested on either of the inaccessible points, which have never been trodden by the foot of man, being perpetually covered with snow and ice, while the plain around is adorned with verdure.

"On the eastern side of this mountain the slope is gentle, so far up as where it divides into the fingers; but on the other sides it is very steep, jagged, and precipitous, giving off branches in a confused and broken manner, stretching off northward, after the general range of the mountains of Armenia. This peculiar form must have favored the descent of the family of Noah into the plains below, where he first commenced the cultivation of the vine, and of other plants calculated to produce food.

"From all appearances, this tremendous mountain is the product of internal fires, which, it is likely, were in operation before the flood, as no traditions of the inhabitants speak of its having been a volcano since that time. The descending portion of the country which bounds the great

plain, being partly round the base of Ararat, favors this supposition, as well, also, as the nature of the strata which form the mountains, giving evidence, by the vast quantities of eruptive matter, that here burnt one of the volcanic fires of the antediluvian world. We have been thus particular to describe the exact situation, as generally allowed, of that range of mountains, because from this place, which is nearly on the western end of the Asiatic continent, Noah and his posterity descended, and spread themselves over many parts of the earth, and, as we suppose, even to America, renewing the race of man, which well-nigh had become extinct from the devastation and ruin of the universal flood."

I have given a partial account of an island or islands having existed in the Atlantic Ocean before the flood, and of the Western Continent having been peopled by the antediluvians, from Asia, who no doubt crossed by way of that isthmus. I will now give a further account, demonstrating how our North American Indians no doubt peopled North America, after the flood, before its discovery by Columbus. That island, known as Atlantis, is said to have been destroyed twelve hundred years before Christ, which was about eleven hundred and forty-four years after the flood, which would have afforded ample time for our American Indians to have emigrated to this country from Asia, where the ark rested.

Some writers affirm that the ten lost tribes of Israel came by way of that isthmus and settled in America, and are the progenitors of our American Indians. Continuing,

one writer says, "This journey carried them among the Tartars, *now so called*, but who were anciently the Scythians, and probably became amalgamated with them. This was the more easily effected on account of the agreement of complexion and common origin. If this may be supposed, we perceive at once how North American Indians are in possession of both Scythian and Jewish practices. Their Scythian customs are as follows: Scalping their prisoners and torturing them to death. Some of the Indian nations also resemble the Tartars in the construction of their canoes, implements of war, and in the chase, with the well-known habit of marching in *Indian file*, and their treatment of the aged. These are Scythian customs. Their Jewish customs are too many to be ennumerated in this work; for a particular account of those customs see Smith's 'View of the Hebrews.'"

Whether this account is correct or not, we will leave it with the reader to judge. Certain it is that there is a marked resemblance between the two nations.

CHAPTER XI.

The Formation of Rocks—Description of "Ringing Rocks" in Pennsylvania —Prints of Hoofs and Paws of Animals in those Rocks.

I WILL now introduce the formation of rocks, in the order of their crystallization, from the creation, and will state facts which can be easily understood by the careful observer, without embarrassing his mind with problematical theories. I do not think it as essential in this work to describe in detail the different materials which make up the different kinds of rocks, as to prove the account of their creation and subsequent formation.

There is one thing certain, which is, that all rocks that have no fossil remains in them are primitive rocks, or rocks of antediluvian formation. There are many rocks, also, which have crystallized since the flood, that contain no fossils. But all rocks which contain fossils have crystallized since the flood, and are the result of detritus deposited by the flood. Under this head we find granite, which may be classed as gray, blue, and red; the qualities and properties of each are well known to our architects and different artificers in stone. Also all quartz rocks of mineral-bearing properties, and various qualities of gray sandstone. We find many of the United States, among which is Penn-

sylvania, richly stored with granite, prominent among which is the celebrated quarries at the "Falls of French Creek."

To prove that they are of antediluvian formation, it is only necessary to walk over the ground and observe the large boulders lying over the surface, which have been denuded of the soil and earth which once covered them, by the waters of the flood, and which *always mark the underlying formation.* It is also to be observed that those granite boulders are *always round on top*, which have been worn in that manner by the waters of the deluge, while they were in a partly crystallized state; the sun of nearly four thousand years since that period has been shining on them, which now has crystallized them to a much greater solidity. It is unnecessary for the reader to travel a great distance from home to make that discovery: if he is a careful observer he can see it wherever granite boulders are found.

The writer has a distinct recollection of many boulders, of granite formation, lying embeded in the soil of a gently sloping hillside, of northwestern exposure, which was covered with timber, in Chester County, near the once noted "Yellow or Chester Springs," about six miles west of Phœnixville, on the farm comprising his birthplace. Those boulders were at that time looked upon only as "big rocks," one of which no doubt would have weighed one hundred tons. All of them were worn round on their tops by the waters of the deluge. To satisfy every reasonable person that no ground could be left for speculation by our

modern geologists, as to their ideas of having been borne there by "glacial action," it is only necessary to say that when the "Pickering Valley Railroad" was building, from 1868 to 1871, those large granite boulders were quarried and utilized for abutment walls for railroad bridges, and all had flat natural beds on which they rested, and were only the outcroppings, as quarrymen call them, of large deposits underneath.

Continuing along that hill-side one mile westward, we come to what was once called "Harris's Hill," once owned by Thomas Harris. There the Pennsylvania Railroad got "railroad blocks," some sixty years ago, to build the division between Philadelphia and Columbia, to support their rails, instead of cross-ties of wood, as used at the present day. Those granite blocks were of gray color, and of very superior quality.

But the greatest phenomenon in nature to the student of geology, in any part of the United States, is a mountain or hill, known as "Ringing Hill," about four miles northeast of Pottstown, Pennsylvania, which every person, within easy distance of reaching, should see. It has been a picnic ground of limited note for many years. We, together with a pleasant little party, spent a day there thirty-eight years ago, which aroused our interest in the place and determined us to form an exploring expedition in the distant future, to give it a more thorough investigation. On the 25th of July, 1891, I accordingly called on D. H. Streeper, who kindly responded with his team, and then summoned S. R. Fisher, landscape photographer, with his large camera and

RINGING ROCKS. NEAR POTTSTOWN, MONTGOMERY COUNTY, PA.

Looking East.

other appliances necessary to make a bird's-eye view of the same, which is here presented to the readers of this work.*

Perhaps the best description I can give to the reader will be an account of our expedition. Having everything stowed away in Mr. Streeper's wagon, together with the necessary provisions and forage for a day's journey, we set out at 7.30 A.M. on our photo-geological surveying expedition. After a drive up the Philadelphia and Reading pike, through a beautiful country of perhaps fifteen miles above Norristown, we sighted the famous "Ringing Hills," yet about five miles distant, over a tortuous, winding road. The mountain, or hill, is perhaps one thousand feet above the Schuylkill at Pottstown. As we ascended the hill, on the southeast side, at a height of perhaps one hundred feet we discovered large quantities of eruptive matter in the form of slag, or trap rock, which undoubtedly has been lying there for nearly four thousand years. Having examined it thoroughly and satisfied ourselves of its formation, we continued our ascent, and finally arrived at "Ringing Rocks," our point of destination, when we secured our team in a shed near by. We then commenced to climb the rocks. Although I had once seen them, still my recollections of them amounted to nothing.

We were at this time standing on the wreck of a once burning mountain, the convulsions of which shook the

---

* Photographic copies can be had from Mr. S. R. Fisher, 72 E. Main Street, Norristown, Pennsylvania.

earth for miles around. Rocks, many of which weigh fifty tons each, are piled up in awful grandeur, in the most weird manner, looking as though they might be the portals of that gaol from whence no traveller returns. Here God has definitely set his seal as a "silent monitor of the past," by leaving the impress of footprints of animals in the face of those rocks, that should forever set at rest the hypothetical idea of the earth having been once in a molten condition. I thought, as I gazed on those footprints, what satisfaction it would afford could prehistoric man be allowed to stand beside us and tell us what antediluvian animals left their footprints in that plastic granite formation (as it was then), what a vast revelation it would be, and what pleasure it would afford man to-day to connect the past with the present.

At the time those rocks received their impress they were undoubtedly in a plastic condition, but the heat in the bowels of the mountain had not as yet had an effect on the upper surface of the embryo rock; gradually that condition manifested itself, and, when those animals left the impressions of their hoofs and paws, the rocks dried, leaving them in the condition in which we see them to-day. Crystallization gradually took place with those rocks, as it did with others for miles around; a smouldering fire was gradually burning underneath, slag was fluxing inside the mountain and issuing therefrom for an indefinite period, when that element which was sent for the destruction of man intervened and rose to a sufficient height, and with its pressure entered the interior, thus generating gas, which caused an

ONE OF THE RINGING ROCKS.

(Showing Shrinkage.)

eruption or breaking of the once flat surfaces, and piling them up indiscriminately as we now see them.

We feel satisfied that the surface was flat before the disruption took place, and at that time animals of different species roamed over the surface, leaving the impress of their hoofs, perfectly marked with sharp lines, such as the hoof of a horse would make without a shoe, with the sharp horny edge of the hoof, one of which will measure nine inches across, which indentations in a number of places will hold a half-pint of water each. At some places the footprints of human beings are plainly visible, deeply sunk in the rocks. At other places many tracks resembling those which may have been made by bears are distinctly visible, while like impressions are present everywhere which bear the appearance as though bears or other animals of like character had been playing and disporting themselves in their antics. In fact, the whole once level surface of the present disrupted formation distinctly shows that it was the resort or play-ground of antediluvian animals of the bear or like species. The surface being warm from subterranean heat, no doubt attracted them there during the cool weather. Some rocks are marked with abrasions or parallel lines from two and a half to four inches in width across their faces, much resembling the stripes of our "national emblem," which no doubt were made by some prehistoric patriot, prophetic of an era when such emblem would be adopted to proudly float over *his* country; and where could he have left an impression of his imaginative brain more fitting than on those rocks?

thus proving that not even that element which was sent to destroy mankind, nor that vast disruption, sufficed to efface it.

There is no doubt that those rocks were once level, and extended to a solid depth of at least thirty feet, because we see to-day underlying rocks as distinctly marked with the tracks of animals as those that are above them, which could in nowise have been accomplished in their present condition; and the close observer will notice that the boulders which now lie on the ground partly embedded in the earth around, and adjoining the above formation, have been denuded, and have been much more worn by the passing waters of the deluge than the disrupted "Ringing Rocks" have been, from the fact of the internal heat of said mountain drying and causing crystallization to take place quicker, so that when the deluge came the "Ringing Rocks," so called, were harder, and withstood erosion by the passing water more readily than their immediate neighbors of like formation which had not been treated to a baking process prior to the flood.

Here is a study for the paleologist. Moses says the creation of man and animals took place in Asia, or it is supposed to have occurred near the Garden of Eden. It was sixteen hundred and fifty-six years from the creation to the flood. We will allow that it took one thousand years for man and animals to have found a home in America, by way of the continent which connected the Eastern and Western Hemispheres together at that time, which no doubt took place the more readily from the fact

of there being no great difference in climate. Were they in Asia about the thirty-eighth degree of north latitude, and had they come in a direct westerly course across the isthmus or tract of land connecting the two continents together at that time, they would have found a home near the centre of the United States, from north to south. Granite formation by that time was of such consistency that, if animals were to walk over it, it would recede and leave an impress or track. Those "Ringing Rocks" received their impressions not less than five thousand years ago, the internal heat kept drying them until the deluge came, and then the disruption took place, which may be explained in this manner. There is a well dug within one hundred yards of the place of disruption, which shows the presence of sulphur. No doubt a vast quantity of that mineral was deposited, along with other minerals of a combustible nature, under that disrupted formation, which became heated and ignited through spontaneous combustion. That fire burned slowly for many years, drying and warming the surface, until the deluge came, the water of which arose and entered the mountain and came in contact with the fire, which immediately changed it from its liquid to its gaseous state, thus in the twinkling of an eye requiring ten thousand times the space it had when in its liquid condition, and the result was one of the greatest convulsions, or rending of rocks, that the world ever witnessed.

There is a like formation near the "narrows" of the Delaware River, in Bucks County, Pennsylvania, which I have not seen, but, from facts gathered from those who have seen

it, an eruption took place at that point in like manner as the one above described.

The question may be asked, Why do not other boulders around and immediately adjoining "Ringing Rocks" bear footprints and animal marks as well as those above spoken of? Our answer is, that we believe those adjacent boulders were at that time covered with earth, and that the passing waters of the flood washed the earth away from them, thus denuding them, and, by erosion of the passing waters, wore the tops of those boulders round, and assisted to increase the height from the present surface of the earth to the top of the present disrupted formations, which together with the apertures between the rocks now mark a height of about fifteen feet above the once level surface. But the close observer will notice that the "Ringing Rocks" show less change by erosion than the boulders around them, from the fact of the disrupted formation called the "Ringing Rocks" having been much more solid, by the subterranean heat at the time of their disruption, than those immediately around them, which were not subjected to that heat; a fact also further proved by the boulders not bearing any depressions or marks made by falling on each other: all show clean fractures, thus proving that they were solid at the time of their disruption.

Here is one deposit of boulders which we are sure our modern geologists cannot claim through the agency of "glacial" transportation, from the fact of their extending to a depth of not less than thirty feet in the earth, which excavation would necessarily have been required to have

been specially prepared for their reception. The only legitimate claim they can advance is the fact that they bear impressions such as bears would make by walking over them, which may have been done by north polar bears, as "trade-marks" *on all rocks thus transported!* The reader may rest assured hereafter, whenever he sees a boulder not bearing that especial "trade-mark," that it is of domestic origin, and that the "glacial period" had nothing whatever to do with its transportation.

Ringing Hill is connected with a chain of hills running from northeast to southwest. All of said hills are thickly covered with granite boulders piled against each other, many of them of many tons' weight. The whole range of hills shows that denuded condition incident to the action of water. All the granite boulders, together with the celebrated "Ringing Rocks," are worn round on their upper surface by erosion through the action of the deluge, and all of them, so far as we could see, were lying on their natural beds. But in no case whatever could the least trace of fire be discovered in either of the adjoining hills.

That slag, or trap rock, which we discovered on ascending the hill, fluxed or oozed out of the mountain-sides, is to-day in its original condition, the same as it was four thousand years ago, portions of which we brought home with us. All other formations about the hill-tops on the same range of hills are beautifully formed granite. This confirms me in the belief that the science of geology as taught to-day is at variance with natural effects, because we see both beautifully-formed granite in large amounts, and

slag, or trap rock, in less quantities, lying beside each other of the same age.

The idea of the earth's crust gradually cooling, and while yet in a semi-molten condition of animals leaving the impress of their hoofs and paws on its surface, is beyond the imagination of the most fertile brain of our modern geologists in the present century; certainly it could not have been argued *with much force* that that was the "glacial period." Did all granite boulders to-day present the same appearance, the weight of argument might be in favor of an igneous condition of the earth. But "Ringing Rocks" are an exception, and we believe that anywhere beyond a circuit of two miles around, from the centre of that hill, it was cool enough for a comfortable habitation for animal life.

The foregoing geological study should interest every one. Geologists tell us that when the earth was first created it was in an igneous condition; during that condition volcanic action was prevalent, and it gradually cooled off, marking what they term the Azoic period,—meaning a period without life. The next age they term the Silurian, when the lowest order of life was created, such as Mollusks and all that have no *vertebræ.*

The next age following they term the Devonian age, when reptiles were created; next mammals, and last of all man was created in the image of God. But they tell us that long periods of time intervened between each evolution.

They also teach that rocks of primitive formation took

place during the Azoic period, among which was granite, such as from "Ringing Rocks," and that many ages passed before mammals, or four-footed beasts, were created; if such were the case, how, then, do they account for the foot-prints of mammals in those rocks?

Would it not be better to accept the account given by Moses, so that we might reconcile ourselves to the belief that man and four-footed beasts were created, as well as rocks, at the time specified in Genesis? because the foot-prints of man and animals are distinctly visible, which have been there not less than five thousand years, and from appearances will remain ten thousand years longer, if time continues. But the question may be asked, how came the footprints of man and animals in those rocks at so early a date of the world's creation, as we presume they were placed there when the creation took place in Asia? Our answer is, that on an examination of the globe we find that the thirty-eighth degree of north latitude passes through Asia and the United States, and that the temperature would necessarily be about the same; and if man and animals would have emigrated due west by way of that isthmus known as the Isle of Atlantis, which once existed, the problem is easily solved.

Mount Ararat in Armenia and "Ringing Rocks" in America are the only two mountains which we have positive evidence of having been in an igneous condition before the flood, both of which the waters of the deluge *may* have extinguished before they broke out as volcanoes.

CHAPTER XII.

The Glacial Period—Glaciers carrying Boulders—The Johnstown Flood.

I WILL now direct the attention of the reader to what our geologists term the "Glacial Period" of the earth's history. On page 29 of Professor Steele's "Fourteen Weeks' Course in Geology," he says,—

"Philosophers have carefully studied the effects of moving masses of ice. They have seen how the glacier pushes its way down the Alpine valley, grinding, rounding, smoothing, and marking the rocks over which it passes, and depositing at the bottom its burden of débris. They have watched the glaciers of polar regions collecting on the sea-shore, until at last great mountains of ice break loose and float southward. They have seen these icebergs grounding and melting in a more congenial clime, where they finally drop their load of rocky fragments on the sea-bottom."

"*Teachings of the Glaciers.*—The geologist, in regions now far removed from glacial action, finds the lower extremities of mountain glens and valleys heaped with mounds of sand and gravel, and the rocky surface marked with parallel grooves, such as no known agency except the glacier ever produces. Resting on the lower hills and scattered over valley and plain beyond, he sees great

boulders of a weight far exceeding the transporting power of water, miles removed from their parent rocks, and with their sides smoothed and marked. He ascribes these results to glaciers and icebergs. He assumes that these mountains were once covered with snow, these glens once filled with glaciers, and that these lower lands were the bottoms of seas on which floating icebergs grounded, and, melting, left their loads of rocky débris."

On page 207 of the same work, we find an article headed,—

"GLACIAL EPOCH.

"The continent has been steadily growing through the ages, until now it has attained its full dimensions. It would seem to be ready for man. It abounds in coal, timber, water, game, and the domestic animals necessary for man's use. We naturally expect his (or man's) creation next, and almost unconsciously look about for traces of his presence. But God's plan is not yet complete. The next period seems one of retrogression, and a superficial view would lead one almost to despair of the result. We must not, however, be impatient, but wait the slow development of nature's laws.

"The earth, having passed the ordeal by fire and water, now enters upon that by ice. The long summer is over. For ages a tropical climate has prevailed, and on the borders of the Arctic Ocean animals have roamed and plants have flourished which now find a home only beneath the burning sun of the tropics. Their reign is past. A tedious Arctic winter succeeds. During its rigors life disappears,

and half of the continent reverts to its primeval desolation. Let us notice some of the traces of this wonderful change —this apparent check in the world's progress."

I will quote from an article on page 208 of the same work, entitled,—

"*Boulders.*—The stones are of all sizes, from small cobble-stones up to great rock-masses. In Whittingham, Vermont, is a boulder whose length is forty feet, and whose estimated weight is three thousand four hundred tons. Another, in Bradford, weighs over two thousand tons. Plymouth Rock is a boulder of syenitic granite, ledges of which are to be seen near Boston. The pedestal of the statue of Peter the Great was hewn from a block of granite weighing fifteen hundred tons, which was found in a neighboring marsh. Boulders are sometimes so nicely poised that they can be rocked by the hand, although an immense force would be required to dislodge them. Boulders are more or less rounded, as if water-worn, and their structure and mineral composition are different from those of the rocks on which they rest.

"They have evidently been transported to the places they occupy. The 'parent ledges' from which they were derived can generally be found at the north of the locality, —sometimes at a distance of a few rods only, at others of many miles. Long Island and Martha's Vineyard are covered with rocks derived from the main-land. The southern part of Rhode Island is strewn with iron ore from Iron Hill (Cumberland, Rhode Island). On Hoosac Mountain is a boulder of five hundred tons' weight, which has

been carried from a ledge across an intervening valley thirteen hundred feet deep, and at the same time elevated one thousand feet above its source. Masses of native copper from Lake Superior are scattered over Wisconsin, Michigan, and even Ohio and Indiana. The streets of Cincinnati are paved with stones quarried by the hand of Nature in the region of the upper lakes (so says Winchell). Azoic rocks are found on the western prairies from four hundred to six hundred miles distant from their homes. Such boulders are significantly termed *lost rocks*. A bushel of pebble-stones gathered in any northern State will often represent nearly every geological formation found for hundreds of miles north of that locality."

We will now stop quoting from Professor Steele's work for the present, and examine carefully what we have quoted.

On page 29 he merely calls our attention to what he intends to say, and describes the views of philosophers on the subject,—modern philosophers, I presume. On page 207, under the head of the "Glacial Epoch," he continues, "The continent has been steadily growing through the ages, until now it has attained its full dimensions." Will the worthy gentleman please tell us what size the continent was when it commenced to grow? That it was a continent there can be no doubt, but its size at the time it "commenced to grow" is what we all feel interested in.

He says, "It would seem to be ready for man." In that fact we agree. "It abounds in coal." In that we disagree. Coal did not form until after the deluge. Consequently, at

the period of which Mr. Steele speaks, man, if he existed at all, had to use wood for fuel.

He says, "Domestic animals were already created for *man's* use, and we naturally expect his creation next, and, almost unconsciously, look about for traces of his presence." That is certainly strange language to advance in this Christian age. Moses tells us that on the sixth day God created "the beasts of the earth according to their kinds, and cattle, and everything that creepeth on the earth, after its kind;" and on the same day God created man in his own image; and that day literally means a day of twenty-four hours, because, as Moses says, "The evening and the morning were the sixth day."

Professor Steele says, "The next period seems one of retrogression, and a superficial view would lead one almost to despair of the result. The earth, having passed the ordeal by fire and water, now enters upon that of ice. The long summer is over. For ages a tropical climate has prevailed, and on the borders of the Arctic Ocean animals have roamed and plants have flourished which now find a home only beneath the burning sun of the tropics."

Here, again, is an article so full of intricacies that it puzzles the most acute imagination. Professor Steele says, "The earth, having passed the ordeal by fire and water, now enters upon that of ice." So we can imagine the "Glacial Epoch" fairly ushered in, and icebergs carrying huge boulders, of thousands of tons' weight, over the face of the whole earth, and all moving in a southerly direction. But he admits that they all appear to be water-worn, or

round on their upper surface. In that matter he is correct.

I have examined many boulders in different parts of the country, and, with few exceptions, all are of granite and all round on top, which distinctly marks the action by the water of the deluge passing over their upper surfaces. But how about their under surfaces? If they were carried as much as four hundred or six hundred miles (?) to their homes on the western prairies, would not the under surfaces have been worn round also? If, as our geologists tell us, our boulders were generally brought to us through the agency of icebergs, it is gratifying to know that they were generally dropped exactly on the soil distinctly marking a deposit of like formation underneath them. Would it not be more easily understood to say that the passing waters of the deluge denuded the hill-tops of their earth, and at the same time rounded the rocks by erosion, and left them lying exposed as we now find them? Such is the case in every instance which I have examined. In further proof of this is a deposit of soapstone, now known as the soapstone quarries, on the boundaries of Philadelphia and Montgomery Counties, crossing the Schuylkill River below "Lafayette Station," on the Philadelphia and Norristown Railroad. There you will find immense boulders dropped immediately on top of that narrow vein of soapstone, distinctly marking its underlying formation.

Professor Steele says, "On Hoosac Mountain is a boulder of five hundred tons' weight, which has been carried from a

ledge across an intervening valley, thirteen hundred feet deep, and at the same time elevated one thousand feet above its source." This seems wonderful, and is surprising to our imagination, but perhaps a close search of the point where the boulder is now lying might reveal similar underlying rocks of like formation. It requires a great stretch of imagination to comprehend all the wonderful changes and transformations which are attributed to the "Glacial Period." But there is one essential feature in the "Glacial Period" which Professor Steele perhaps may have forgotten, that is, that the boulder could not have been carried around on dry land, by icebergs, across "an intervening valley, thirteen hundred feet deep, and at the same time elevated one thousand feet above its source." He does not inform us that this portion of the globe had been submerged by water during that period; he only says, "The earth, having passed the ordeal by fire and water, now enters upon that of ice," and leaves us to conjecture, or to assist him in our imaginations, as to the accomplishment of such a feat.

I can much better understand this chaotic condition, from a letter I have just received from an eye-witness of the destructive flood at Johnstown, Pennsylvania, which is as follows:

"To J. King:

"Dear Sir,—Replying to your inquiry of 25th inst., for facts incident to the 'great wash' of May 31, 1889, I will cite you the following as being absolutely correct, and of my own personal knowledge and observation.

"The iron safe of 'Gautier Dept.' of Cambria Iron and Steel Co., which stood in a small one-story frame office building, was moved a distance of fully a quarter of a mile. Its weight, as given by the makers, was five tons, exclusive of its contents at the time of the great disaster. It most certainly did not float in its building to the place of its deposit, for the volume and rush of the waters at that locality were such that bodies of any size were torn and smashed into smithereens in the twinkling of an eye, and the safe must have been tumbled and rolled to its place by the waters alone. The buildings (which were all of steel) and machinery of the above named steel plant were totally annihilated; parts of the same were swept fully a half mile.

"But the most remarkable occurrence at this works was the destruction and moving of a huge shear, used for cutting steel plates (cold), from one-fourth inch thick and upwards. The shear was broken entirely off near the base plate; the latter, with the foundation to which it was attached, was pulled bodily out of its bed, tumbled and rolled a distance of three hundred yards. . . . Doubtless some heavy object was driven against the shear and dislodged it; the same blow presumably cracked the heavy castings, and the water completed the work of removal.

"A score more of similar occurrences of less magnitude at this same locality might be cited. Many merchants' safes were removed great distances, and many more have never been recovered. A locomotive tender, with its load of coal,—of the type called 'mountain pushers,' used by

the P. R. R. on its heavy grades in the 'Alleghanies,'— was found a full quarter of a mile from their tracks. Loaded cars of lumber and oil-tank cars were scattered all over the flooded district. Many car-trucks were found in cellars when the owners had commenced the restoration of their homes.

"The statement that locomotives were washed four miles is an exaggeration (at least as to distance). About twenty locomotives were destroyed at Conemaugh, a coaling station on the P. R. R., two miles east of this place, in the direct path of the flood. More than ten of these were found in the channel of the river, some at least one hundred yards from their original location, unquestionably moved there by the rush of waters.

"Very respectfully yours,

"GOMER WALTERS,

"*Assistant Postmaster.*"

Here we have the words of an eye-witness in evidence of a destructive flood, which can be corroborated by many yet living, which brought death to the doors of many households, all of which, my informant says, occurred in the twinkling of an eye, which within itself seems incomprehensible. But when Moses tells us that it "repented God that he had made man," and in his anger he brought destruction on him, through a deluge caused by its raining forty days and forty nights and by the breaking up of the fountains of the great deep, and that the waters rose fifteen cubits higher than the mountain-tops, which were not less

than three miles in height, and lasted about twelve months before it subsided, we cannot wonder that rocks were in many instances borne to a great distance from their native place of formation without the aid of the mythical "glacier." As a proof of such having been the case, Professor Steele says they are "round, as though water-worn," all of them, also, are of antediluvian origin.

Man's imagination to-day must be raised beyond the ordinary sphere to be able to have the least comprehension of that vast calamity which befell "all living," except those which were safely sealed in the ark. We can only draw conclusions from small inundations, such as visited Johnstown, Pennsylvania, May 31, 1889.

We do not wish to be understood as denying "glacial action" entirely. We well know that with every Arctic expedition towards the north pole large drifting icebergs are encountered, which float southward and deposit their freight of débris in the ocean, and that avalanches of snow and ice are precipitated from the Alpine heights into the fertile plains below, carrying immense boulders with them, which may form deep markings on the surface of underlying rocks which they come in contact with. But to try to convince people of the present day that such was generally the case over the face of the earth is worthy of ridicule.

CHAPTER XIII.

Soapstone and Asbestos—Conshohocken Stone—Scale for Measuring Depth of the Deluge left in Limestones Rock below Norristown—The Origin of Limestone as our Geologists Assert.

I WILL now speak more in detail of the soapstone formation, which is a vein of perhaps one hundred feet in width, crossing the Schuylkill River in a northeast and southwest direction about six miles below Norristown.

On page 55 of Professor Steele's work, he describes "soapstone, or steatite (*stear*, fat), as a massive crystalline variety, which is susceptible of being worked into any desired form and of receiving a high polish. It can be sawed into slabs or turned in a lathe. It is made into inkstands, water-pipes, and fire-stones for furnaces and culinary vessels." I will also add that soapstone can be used as a lubricant, and is much used for wash-tubs, and I think, from its general formation, that it is the base from which asbestos is formed. That mineral property known as asbestos appears to be of wood fibre, intermixed with soapstone through sedimentary deposit, perhaps by the waters of the deluge passing over a deposit of soapstone at the time of the flood, before crystallization had as firmly taken place as at the present day. The detritus, or such portions

of the soapstone deposit as the waters would wear off, may have been carried until it came in contact with timber, thus forming an amalgamation and producing to-day what we know in commerce as asbestos. Both soapstone and asbestos are alike refractory towards an igneous condition, and neither would have formed special elements in favor of the first condition of the earth as advanced by our modern geologists.

We have a light-gray sandstone near Norristown, forming the interior of Sandy Hill (so called), which is an excellent quality of building-stone, easily worked and very durable, of antediluvian formation.

We have a very important formation, rather difficult to describe, known as Conshohocken stone, which is extensively used for foundation walls in large buildings in Philadelphia and elsewhere. In the foundations of the public buildings at Broad and Market Streets, the foundations of the post-office buildings, Ninth and Market and Chestnut Streets, the foundations of the Drexel Building at Fifth and Chestnut Streets, and nearly every building of importance now being built in the city of Philadelphia, it was used as the base of their construction. In fact, the qualities of it are so good that architects name it in their specifications in preference to all others. It will bear an immense weight without crushing, will resist the action of fire much longer than granite, and has a cleavage which admits of its being easily quarried, and it can be readily split by the quarrymen so as to afford a broad base for purposes of construction. I consulted architect Collins about its component

parts. He said it was "a gray limestone, with an admixture of soapstone in its composition, with one or two other mineral substances."

It is found in the quarry at an angle of about eighty degrees with the horizon, with limestone formation above or northwest of it, and is a short distance above the soapstone vein. It is of antediluvian formation, and I can only connect the limestone which now composes a part of its composition in the following manner. The strata or cleavage being nearly vertical, and heavy bodies of limestone being deposited and crystallized immediately west of it, prove that the sand or deposit which now forms the limestone in that locality was swept over it by the flood and deposited in it by absorption. The same may be said of the boulders lying on the top of the soapstone vein and for a depth of perhaps fifty feet from the surface of the soapstone quarry. That portion above named is of inferior quality. The purest and best soapstone is quarried at a depth of perhaps seventy-five feet from the surface of the earth. The inferior or mixed quality can be accounted for only by the detritus passing over it and mingling with it during the flood, which has since crystallized, and where it has been an injury to the soapstone, it has been a benefit to the Conshohocken stone.

There might be much more said regarding the formation of rocks and mineral substances of antediluvian formation, but we trust there has been sufficient said to guide the reader in his judgment hereafter in forming an opinion of such portions of the earth's surface as he may wish to examine.

It will be understood that the stone above referred to and all rock of antediluvian formation possess that coloring which God gave them in the creation.

We will now consider the post-diluvian formation of rocks, or such as have crystallized since the flood, and will add that you will find no granite boulders covering rocks of the post-diluvian period except the waters of the flood washed them there. We do not consider the "Glacial Epoch" with any favor whatever, in a general way, only in such portions of the world as the glaciers are found to-day.

I will now endeavor to give the reader an account of the depth of the waters of the flood.

Perhaps the best place, and the only one known at present to exist, for that purpose is immediately on the southern limits of Norristown, extending a distance of about two miles down the Schuylkill River. There the Almighty has left a *scale* in limestone rocks, by which we can ascertain the depth of those waters which swept all living from the face of the earth, as accurately, almost, as if we had been an eye-witness. Certain it is that the waters were not less than those rocks indicate, and we may safely add thereto.

The rocks which I refer to are a stratified formation of bastard limestone, intermixed in many places with yellow sand, and the interstices between the layers, as they are now formed, are filled in with gravel and earth. The formation is a body of detritus which has been deposited by the waters of the flood pouring over "Sandy Hill," as it is

now called, and lying with the same angle of inclination as the southern slope of the hill, on the northeast side of the river.

In order to obtain the best view of the deposit, it is necessary to be on the southwest side of the river, about two miles below Bridgeport, which is immediately opposite Norristown. No man can stand there and contemplate the awful destruction which befell his fellow-man without shuddering.

By examining the illustration, you will find strata, shaped in the form of an elongated letter "S," known to architects and mechanics as "ogee," or wave-like curves. Such curves could not have been formed in any other manner than by the waters of the flood pouring over the hill, with the present current of the Schuylkill River, and striking some slight obstruction, which diverted them from a course which accompanying flows had taken, and depositing their detritus as shown. In further proof of that fact, the same formation of limestone-rock shows strata exactly in an oppposite direction, about five miles below Norristown, between Conshohocken and Spring Mills, which were caused by the same flow of water pouring over "Sandy Hill," and glancing in an oblique direction, the same as waters which pour over a dam-breast, as shown in the illustration.

It is argued by scientists that detritus could not have been deposited in that manner by the flow of water from the west, as above described, in which we agree. At the commencement of the flood, as a natural consequence, all bodies or properties would have been carried with the

DEPOSIT AGAINST SOUTH SIDE OF SANDY HILL.

CONTINUATION OF SAME FORMATION AT AN OPPOSITE ANGLE, FIVE MILES BELOW.

rushing waters at first, as they are carried to-day; but when the waters would have swollen to a half mile or less in height, the weight or pressure of the same would have caused such deposit to have remained in such manner as we now see it. It is well known that the current at the bottom of any deep body of water is less than it is towards the surface, from the fact of the superincumbent weight of the mass of water on the top pressing with a pressure of sixty-two pounds per cubic foot on the top of the undercurrent.

God could in no wise better have placed his seal for deciding circumstances and determining facts, than by leaving those curved lines in those rocks.

The greatest depth of the ocean yet discovered I believe to be about five and a half miles, and to comprehend a depth of two and a half miles, by standing on the southwest side of the river and looking across, is impossible, although I think the reader would be well paid for a visit to the banks of the Schuylkill on some fine summer evening, and view that natural curiosity from the southwest or opposite side of the river.

From present appearances the surface of the earth was much more uneven during the antediluvian period than it is now. The waters of the flood denuded the hill-tops, and deposited its débris in the valleys.

On the southwest side of the Schuylkill, immediately opposite the formation we have spoken of, is a large deposit of limestone, lying in horizontal strata which there is no doubt was deposited by the same agency at the same time.

The angle with the horizon of the different stratifications has been caused by the contour of the earth's surface over which the waters run.

"Sandy Hill" has its southwestern terminus at the Schuylkill River at present, and no doubt had before the flood. Across the river immediately opposite is a level country, which determines the stratification of each bed of limestone as it is found.

Perhaps it will be well, before proceeding further, to give the reader an account of the formation of limestone as described by our modern geologists, so that he may draw his own conclusions. On page 52 of Professor Steele's work we find the

"*Origin of Limestone.*—Limestone forms a prominent constituent of shells, bones, corals, etc. Animals have the power of secreting the lime from the water in which they live, or from the food they eat. When they die, their mineral remains accumulate in great quantities, and gradually harden into rock. Chalk was formed by the consolidation of minute shells, smaller than a grain of sand. As each particle is thus cellular and not solid, the chalk has a soft, porous structure. The microscope reveals these tiny shells in the glazing on a visiting-card. Even when the rock contains no trace of fossils, it may have been made by the sea breaking and grinding shells and corals into a fine powder, just as it grinds rock and pebbles into fine sand. We see this process now going on in the formation of coral-reefs, as, for example, off the coast of Florida. From the vast extent of the limestone rock on the earth,

we can form some estimate of the amount of animal life which has existed in past ages."

In the same work, page 58, we find, "Limestone, which has been pulverized from shells, corals, etc., by the action of the water, and been deposited in sediment at the bottom of the sea."

In the same work, page 115, we find (Changes in the Sea, Life, and Rock), "Shales were produced in the muddy water, and limestones in the shallow, clearer sea, since the coral animal thrives best in pure water less than a hundred feet deep."

In the same work, page 117, we find (Kinds of Rock), "This was the first great limestone period of the continent. In New York there are four epochs,—(1) the *Chazy limestone*, a dark, irregular rock, named from a locality near Lake Champlain; (2) the *Bird's-Eye limestone*, a dove-colored rock containing fine white crystalline points scattered through it; (3) the *Black River limestone*, a black, hard-grained marble capable of a high polish, named from the river of that name east of Lake Ontario; (4) the *Trenton* proper, a hard, compact rock of a grayish or black color, so called from the well-known gorge at Trenton Falls. This epoch of the period has been identified in Canada and throughout the South and West, but the other epochs vary somewhat, and their equivalents are not so well established."

In the same work, page 122, we find—what I want every reader to keep fresh in his mind as the most positive proof of the deluge, but which catastrophe they ignore, viz.,—

"*Kinds of Rock.*—It consists mainly of soft clay or shales, and even the Cincinnati limestone is interlaminated with shale or marl. Its color is dark, and it is frequently bituminous, so as to afford a black pigment. There are thin seams of coal, which have many times tantalized those ignorant of geology with unfounded hopes of the discovery of profitable beds of coal." There never could be better evidence afforded of a universal flood, such as Moses records, than those *mute witnesses* in that formation.

We find as follows: soft clay, carbonate of lime, which at that time was a body of fine sand, which has since that time crystallized into limestone, the same interlaminated or mixed with shale or marl. "Its color is dark, and it is frequently bituminous, so as to afford a black pigment." Does not that prove a deposit of timber which has since undergone transformation, or changed into coal, for a pigment which may be ground into paint and forming a body such as plumbago forms for that purpose? There are also seams of coal, etc., intermixed with it, but not in paying quantities. Does not that also prove a deposit of timber which has changed into coal?

Could we produce better evidence of a flood, if asked to produce it ourselves, than that offered by Professor Steele in his "Fourteen Weeks' Course in Geology"? If a person of limited education was asked what brought all of that débris together, he could only answer, intelligently, a flood, or an immense body of water, at *some period of the world's history.*

We will next give a description of chalk as we find it in

Professor Steele's work on page 188, and then dismiss quoting from his work for the present. Chalk is carbonate of lime, which geologists say has been formed by insect life at the bottom of the sea. We think it is carbonate of lime transformed, through insect life, into chalk when in a partial state of crystallization, but cannot agree that those animalcula were the creators of chalk and limestone, as many geologists say they were. The creating, or forming, of mineral substances by them is another enigma which is hard to solve.

"*Chalk.*—If we examine chalk with a powerful microscope, we shall find that it is composed of the remains of numerous zoöphytes, of various kinds of minute shells, and above all of rhizopods (*foramenifera*), so tiny that their very smallness seems to have rendered them indestructible. Eighteen hundred of these, placed in a row, would occupy but an inch of space. Schleiden says that the chalk on a visiting-card is a microscopic cabinet of a hundred thousand shells. Throughout the beds of chalk are scattered nodules of flint, which, being broken, reveal at the centre shells, corals, etc., the nuclei around which the flint collected out of the chalk before that had consolidated from the pasty mass in which it first formed on the sea-bottom."

There is also a foot-note appended, as follows: "The imagination fails to conceive the countless millions of these foramenifera in all ages. In nature nothing is small. She seems to have delighted in achieving the grandest results with the feeblest means. The history of this animalcule is a striking illustration of this truth. A handful of sand

taken up on the sea-shore is often half composed of these microscopic shells. The Paris chalk contains them so abundantly that D'Orbigny found fifty-eight thousand in a cubic inch of rock. Paris itself is built up of these cast-off abodes of the tiny rhizopod. The species vary in different sections and ages. A curious application of this has lately come to notice. Ehrenberg was requested to assist in tracing the robbery of a case of wine. It had been re-packed by the criminal in sand differing from that in the original case. Ehrenberg, by a microscopic analysis, determined that the sand was found only on a certain ancient sea-coast in Germany. On this fact being discovered, the locality of the crime was speedily found and the thief arrested."

We thus see that that insect-life which transformed limestone into chalk was the exception and not the rule, although at that period of the world's history soon after the flood, when the carbonate of lime was yet in a pasty, uncrystallized condition, those animalcula seemed to devour it, much as the locusts of Egypt or the grasshopper of Kansas some years ago devoured vegetation. The only difference which I can see is that the one was a mineral and the other a vegetable substance on which they lived, and the mineral substance crystallized and caught them, furnishing a place of sepulture, thereby forming chalk for the use of man during the post-diluvian period. But that *all* limestone was formed at the bottom of the sea, through animal life, during a period of "the far distant past," is entirely mythical, which I will presently prove. I believe the age for the formation of chalk has passed.

CHAPTER XIV.

Port Kennedy Bone Cave.

One of the largest and most valuable deposits of limestone on the Schuylkill River is at Port Kennedy, a distance of twenty-one and a half miles north of Philadelphia. The visitor can here view a solid breast of limestone, now being worked, of sixty feet in height, extending to an unknown depth.

On page 1122 of the "History of Montgomery County, Pennsylvania," we find a notice of a cave having been found in Upper Providence Township, at Port Kennedy, in the year 1846, and on the 4th of July, of the same year, the Port Kennedy Band held a concert in said cave, at which the Hon. George N. Corson, of Norristown, was present, which cave was beautifully decorated with stalactites depending from the vaulted ceiling and stalagmites which covered the floor.

The concert-chamber, or cave, furnished by Nature, was as large as the largest room in any building in Norristown at that time, and remained an object of idle curiosity only to an occasional visitor. After the lapse of nearly a quarter of a century, a more careful observer

noticed that it was of more than ordinary interest, as the following will prove.

I will here tender my regards to my esteemed friend Colonel N. M. Ellis, of Phœnixville, for kindly loaning me a copy of a scientific report made by Professor E. D. Cope, and read before the American Philosophical Society April 7, 1871, which is as follows:

"My friend Charles M. Wheatley (now deceased) has already given an account of the discovery of a fissure in the Potsdam limestone of Montgomery County, Pennsylvania, containing the remains of numerous animals and plants of the Post-Pliocene period (see Amer. Jour. Sci. Arts, April, 1871). Mordecai M. Ellis (son of Colonel N. M. Ellis), of Phœnixville, having brought to his notice mastodon remains exposed in quarrying limestone near Port Kennedy, he visited the spot, and determined the existence of the fissure and its contents.

"In the article in question he describes it as situated near the line of junction of the Triassic red sandstone. Its depth is nearly fifty feet, and the greatest width thirty; at the summit or surface of the limestone its width is twenty feet. It is filled to a depth of forty feet with the débris of the neighboring Triassic strata, of a red color; below this point is a bed of tough 'black clay eighteen inches in thickness, filled with leaves, stems, and seed-vessels of Post-Tertiary plants. Scattered through all this mass of vegetable remains, and also in a red tough clay underneath for six to eight inches in depth, are found the fossils noticed in this paper.'

"Mr. Wheatley furnishes a list of the species we had identified up to the time of writing,—viz., twenty-seven vertebrata, ten coleoptera, and ten plants. These numbers have been considerably increased up to the present time, and I look to a much fuller and more complete exposition of the Post-Pliocene vertebrate found, in consequence of a more thorough examination of the remaining part of the fissure, by my friend C. M. Wheatley.

"As regards the position of the remains, the article above quoted proceeds to state that 'the remains of Mylodon, Ursus, and Tapirus have been mostly obtained from the tough red clay directly under the plant bed, but the remains of rodents, snakes, tortoises, plants, and insects are entirely confined to the plant bed. Neither the bones nor the teeth are rolled or water-worn, but all are sharp and well defined.'

"The appearance of the specimens corroborates the above statements. I would add some exceptions. Thus, two of the specimens referred to *Arvicola Sigmodus* came from the red bed and one from the black; one, *Megalonyx Wheatleyi*, came from the black bed, the others from the red. Milk-teeth of Mastodon occur in the red bed also. General remarks are deferred to the close of the report."

There is an exhaustive dissertation of twenty-four pages, following the above, by Professor Cope, which I omit, fearing it will tire the reader. Should he wish a more extended notice, he can find a full description in the reports of the American Philosophical Society, Volume XII.—J.

I will yet add a portion of Professor Cope's general summary.

"*Felis, Linn.*—Two proximal phalanges of a species of this or an allied genus were found by Mr. Wheatley. They pertained to an animal of the size of the jaguar (*Felis Onca*). A fragment of a canine tooth indicates a cat as large as the tiger, but is too imperfect to allow of determination. Some vertebræ of a carnivorous animal, perhaps a dog, were also found.

"The result up to the present time may be summed up as follows:

	Species.	Individuals.
Edentata (without teeth).		
Megalonyx	5	15
Mylodon	1	(?) 2
Rodentia (gnawing).		
Arvicola	6	15
Hesperomys	1	1
Jaculus	1	1
Sciurus	1	2
Erthicon	1	1
Lepus	1	7
Praotherium	1	1
Undetermined	2	2
Insectivora (feeding on insects).		
Scalops	1	1
Chiroptera	(?) 1	6
Ungulata.		
Mastodon	1	2
Tapirus	2	4
Equus	2	3
Bos	1	3
Undetermined	2	3

Carnivora (flesh-eating).	Species.	Individuals.
Ursus	1	(?) 2
Canis	(?) 1	1
Felis	2	2
Mammilia, total	34	74

"In addition to the above there are as follows: Of birds there are fragments of two species,—one a turkey, with the spur preserved, probably the *M. altus*, Marsh; the other a snipe. The reptiles include one or two species of tortoises and three or four serpents. There are a few bones apparently of batrachians, or frogs. The whole number of species of vertebrata is about forty, represented by perhaps ninety individuals."

GENERAL OBSERVATIONS.

"Several authors have noticed the great difference in character between the Post-Pliocene fauna [or animals] of North America and those which preceded it in Tertiary time. It is well known that, while the Miocene mammalia are more or less similar to those of Miocene Europe and Asia, and the Pliocene vertebrata have a corresponding resemblance to those of the same period of Europe and Asia, and the present one of Africa, the Post-Pliocene resembles, in many particulars, that of South America or the neotropical region.

"In examining the list of Post-Pliocene mammalia known up to 1867, I found that of thirty species eleven were represented by members of the same genus or family in the neotropical region. In an enumeration of the species from

the caves in 1869, which included twenty-seven species of twenty-three genera, six genera were shown to be of neotropical type.

"In an unpublished list of vertebrata which the writer [Professor Cope] exhumed in a bone breccia from a cave in East Tennessee, there are twenty species included. Prominent among these are *Megalonyx*, *Dicotyles*, *Tapirus*, *Cervus*, and *Sciurus*, the first three neotropical.

"The species from the Port Kennedy bone cave may be arranged as follows:

	Species.
Neotropical forms	11
Peculiar nearctic (North America)	3
Genera common to both hemispheres	11
Uncertain	9
Total	34

"The theory of evolution requires that change of fauna [animals] in any very brief period of geologic time should be accomplished by migration. Accordingly, authors have suspected that Asia and North America, and perhaps Europe, were connected by land during the Miocene period. Thus, Leidy (Mammilia of Dakota and Nebraska, 1869, p. 360) suspects that North America was peopled from the west, from a continent now submerged beneath the Pacific Ocean. Professor Huxley (Anniv. Address, Lond. Geolog. Society, 1870) makes a similar proposition, but adds that there is no evidence as to whether the connection was with Europe or Asia.

"In describing fossil *Cobitida*, a family of fresh-water

fishes, from Idaho, in 1871 (Proceed. Am. Philo. Soc., p. 55), I have adduced evidence that the connection was with Asia. These *Cobitidæ*, as is well known, have no existing representatives in America, and are one of the Asiatic types characteristic of our Pliocene period. As fresh-water fishes, their migration is restricted to fresh-water communication. Now, as the Rocky Mountain ranges were in large part elevated prior to Pliocene time, and the watercourses had their present directions, it is obvious that the migration of fresh-water fishes occupying waters on the west side of those ranges must have been to or from the west, and not the east. That these fishes, then, passed through fresh-water connections existing on a continent now submerged beneath the Pacific Ocean, seems probable.

"The destruction of the Pliocene fauna, or animals, is generally admitted to have been brought about by the rigors of the glacial climate and the extension southward of the ice sheet and snow-falls. Near the same time, connection with Asia must have been severed by the descent of the North Pacific continent. Some Pliocene types not now existent in North America may have been driven into the neotropical region, and may be still represented in their descendants,—the lamas, the only existing *Camelidæ* of the new world, with the horses and perhaps others of the higher mammilia of that region. The existence of the extinct *Mastodon*, *Machærodus*, etc., in the Post-Pliocene of the same region, mentioned by Huxley as a puzzling fact (Address, l. c.), may be accounted for in the same way.

"Of course, on the northward retreat of the ice sheet,

the mammilian fauna would have to be derived from the south, for communication direct with Asia no longer existed. If Behring's Straits were not yet opened, the masses of glacial ice covering those regions would effectually prevent immigration by that supposed connection. The resulting Post-Pliocene fauna would naturally partake of the mixed character which our brief investigations into it have revealed. The neotropical forms would occupy regions left vacant, or peopled by a sparse remnant of boreal genera and species. This view I proposed some time ago, and Dr. Leidy has added his valuable opinion to the same effect.

"Has any great disturbance of level intervened between the occupation of the Post-Pliocene fauna and the present period? Professor Dana (Manual of Geology, 1862) summarizes the results attained up to his writing (p. 553) by showing that the period succeeding the glacial drift was one of submergence, especially in arctic latitudes. He states the depression near Montreal to have been four hundred and fifty or more feet and one thousand feet in arctic regions. Of the Middle States he says nothing, and of the South that the evidence is not satisfactory. This descent of level he regards as that which caused the melting of the glacial ice, stratification of the drift, deposition of gravels, and elevation of temperature. All these changes would naturally precede the introduction of a post-glacial fauna from a warmer region, so that, for this and other reasons, the Champlain epoch may be regarded as that opening the Post-Pliocene, and its fauna to be represented by the Wal-

rus, which extended its range to Virginia, the Reindeer to New Jersey, and the *Beluga* of the Champlain clays.

"The origin of the caves which so abound in the limestones of the Alleghany and Mississippi valley regions is a subject of much interest. Their galleries measure many thousands of miles, and their number is legion. The writer has examined twenty-five, in more or less detail, in Virginia and Tennessee, and can add his testimony to the belief that they have been formed by currents of running water. They generally extend in a direction parallel to the strike of the strata, and have their greatest diameter in the direction of the dip. Their depth is determined in some measure by the softness of the stratum whose removal has given them existence, but in thinly-stratified or soft material the roofs or large masses of rock fall in, which interrupt the passage below. Caves, however, exist where the strata are horizontal. Their course is changed by joints or faults, into which the excavating waters have found their way.

"That these caves were formed prior to the Post-Pliocene fauna is evident from the fact that they contain its remains. That they were not in existence prior to the drift is probable, from the fact that they contain no remains of life of any earlier period, so far as known, though in only two cases, in Virginia and Pennsylvania, have they been examined to the bottom.

"No agency is at hand to account for their excavation, comparable in potency and efficiency to the floods supposed to have marked the close of the glacial period, and which Professor Dana ascribes to the Champlain epoch. An ex-

traordinary number of rapidly-flowing waters must have operated over a great part of the Southern States, some of them at an elevation of fifteen hundred feet and over (perhaps two thousand) above the present level of the sea. A cave in the Gap Mountains on the Kanawha River, which I explored for three miles, has at least that elevation. That a territory experiencing such conditions was suitable for the occupation of such a fauna as the deposits contained in these caves reveal is not probable. The material in which the bones occur in the South is an impure limestone, being mixed with and colored by the red soil which covers the surface of the ground. It is rather soft, but hardens on exposure to the air.

"The question, then, remains so far unanswered as to whether a submergence occurred subsequent to the development of the Post-Pliocene mammalian fauna. That some important change took place is rendered probable by the fact that nearly all the neotropical types of the animals have been banished from our territory, and the greater part of the species of all types have become extinct. Two facts have come under my observation which indicate a subsequent submergence.

"A series of caves or portions of a single cave once existing on the southeast side of a range of low hills among the Alleghany Mountains in Wythe County, Virginia, was found to have been removed by denudation, fragments of the bottom deposit only remaining in fissures and concavities, separated by various intervals from each other. These fragments yielded the remains of twenty species of

Post-Pliocene mammalia. This denudation can be ascribed to local causes, following a subsidence of uncertain extent. In a cave examined in Tennessee the ossiferous deposit was in part attached to the *roof* of the chamber. Identical fossils were taken from the floor. This might, however, be accounted for on local grounds.

"The islands of the eastern part of the West Indies appear to have been separated by submergence of larger areas at the close of the period during which they were inhabited by Post-Pliocene mammalia and shells. The caves of Anguilla include remains of twelve vertebrates, of which seven are mammalia of extinct species, and several of them are of large size. These are associated with the recent species of mollusks *Turbo pica* and a *Tudora* near *pupæformis*. As these large animals no doubt required a more extended territory for their support than that represented by the small island Anguilla, there is every probability that the separation of these islands took place at a late period of time, and probably subsequent to the spread of the Post-Pliocene fauna over North America."

The foregoing chapter is an extract from a report, made by Professor E. D. Cope, of fossils found in a cave in a body of limestone at Port Kennedy, Pennsylvania. He does not admit a deluge such as Moses speaks of, but hints that water had much to do with it.

CHAPTER XV.

Speculative Opinions regarding the Deposit of Fossils in the Port Kennedy Cave—A Live Toad found in the Marble in Henderson's Quarry—Fossils found in Digging a Well Four Hundred and Fifty Miles west of Omaha.

GREAT credit is due the late Charles M. Wheatley and Professor E. D. Cope for the interest they have shown in classifying, and thus preserving a record of, those ante-diluvian or Pliocenic fauna (as they term them). Had they been given but a passing notice as fossils found in a cave at Port Kennedy, and not had any distinguishing characteristics connected with them, the world would have been made but little wiser by the find; but, when we are told that there were thirty-four distinct species, and seventy-four animals, two of which were mastodons, a species of the largest animal on earth, we are void of language to express our consternation. Many theories are advanced as to how so many different species of animals got there. If you ask the average amateur scientist, his answer is, "They were thrown up by an upheaval." But where were those animals prior to that upheaval? Certainly not within the interior of the earth. That is a question really harder to answer than the first. If those animals had been of one species, we might have supposed they were together browsing on

the river-bank when their destruction took place, but, being dissimilar, their aggregation seems the more difficult.

"The destruction of the Pliocene fauna is generally admitted to have been brought about by the rigors of the glacial climate, and the extension southward of the ice sheet and snow-falls." Here, too, Professor Cope fails to advance anything whatever to account for the bodies of those seventy-four animals hermetically sealed beneath that débris in the "Port Kennedy bone cave."

How those animals got on the American continent from Asia, their place of origin, is easily accounted for by the fact of the island of Atlantis having existed up to within twelve hundred years of the advent of Christ. That island, or a number of them, connected the eastern and western continents together, which made an easy passage for those animals from Asia. And Professor Cope more than hints at the fact that "connection with Asia must have been severed by the descent of the North Pacific continent." His, however, is only supposition, formed to suit existing circumstances. Of the existence of the island of Atlantis, Solon, Plato, Euclid, and Anacharsis bear testimony to the fact.

After having arrived at a conclusion as to how they might have got from Asia to the American continent, we are still without information regarding their sepulture in those limestone rocks.

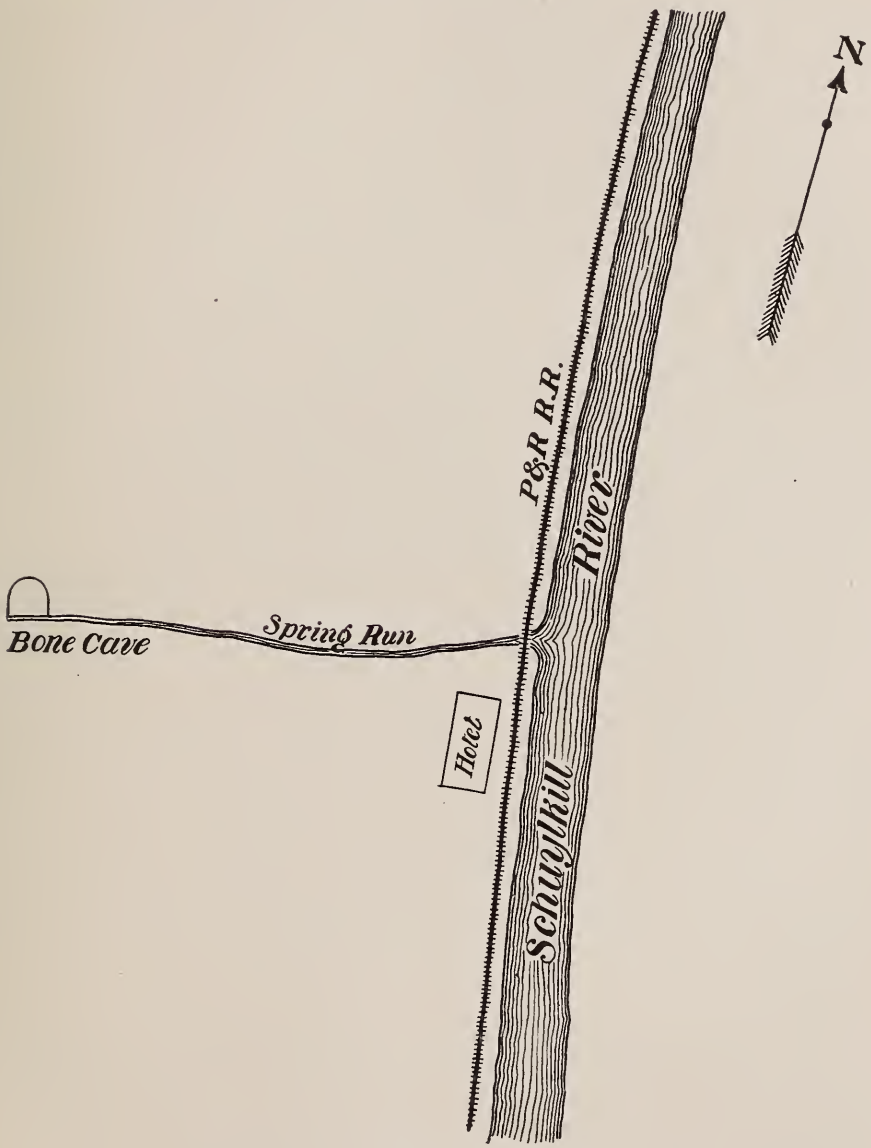
Professor Cope further remarks, "That these caves were formed prior to the Post-Pliocene fauna is evident from the fact that they contain its remains." These remarks

would lead us to believe that those caves were formed in the limestone, and that those animals, in some manner hard to account for, crawled into them and died there. That is the most unlikely view that can be taken, of any yet advanced. Among the collection of fossils were the remains of two mastodons, which of themselves would have filled the cave if they had walked in. Accounts are given of mastodons having been sixty feet long, twenty-five feet high, and eleven feet across over their hinder parts, teeth having been dug up weighing seventeen pounds each; besides which, their tusks are each fourteen feet in length. Only two animals of that size could have been stabled at one time in the Port Kennedy bone cave, and there are yet seventy animals to be provided for in that aggregation.

I have thus far reasoned from facts set forth in Professor Cope's report, which was read before the American Philosophical Society, April 7, 1871; and, interesting as it is as a matter of investigation, I fail to see a satisfactory solution of the phenomena. I will now advance a theory which I think will meet the case.

We will draw an imaginary picture of the earth's surface where the cave was located, as it appeared before the flood. The antediluvian surface, or present strata, underlying the vast limestone deposit is of red shale or clay of similar color, which now marks the formation on the opposite side of the Schuylkill River. The small stream or rivulet known as Spring Run, which rises above or southwest of the river, flows down through the village of Port Kennedy, and empties into the river at that point, was

there before the flood. The waters of the deluge flowed at first along their natural courses.



BONE CAVE AT PORT KENNEDY, PA.

Those animals were roaming over the earth, no doubt in the vicinity of the beautiful Schuylkill, when God sent

his messenger of destruction upon them. They were terrified through instinct, and no doubt awaited their destruction, and grouped together, as animals now do in a snowstorm on our western prairies. The red mud must have covered them by the flow of the small stream above described; and possibly there was an obstruction or bayou in the stream which their bodies lodged against; if such was not the case they would have been swept into the river and carried to the ocean. Immediately following came the sand, or carbonate of lime, so called, which covered them up with vegetation of that period, consisting of plants and leaves all promiscuously embedded, which formed the mass to support the sand or carbonate of lime, which has since crystallized and become limestone of commercial value, for which it is sought, and while quarrying it out those fossils were discovered.

Large deposits of limestone of like character are found for many miles along the banks of the Schuylkill and the adjacent valleys, both northeast and southwest of the river. No doubt the flow of that same river carried vast quantities of carbonate of lime to the ocean at the same time, thus forming the bed of the ocean in many places of limestone.

Our modern geologists assert that *all* limestone, no matter where found, indicates that the ocean bed once rested on that spot, and that all limestone is formed by insects at the bottom of the sea; from the fact, as they say, that certain small insects possess the power of secreting the lime from the water in which they live or from the food they

eat. They further say that all chalk is the product of a small insect at the bottom of the ocean, which is limestone eaten by that animalcula or insect. We claim that no insect whatever can create or produce anything. If they have the power to secrete the lime from the water, they cannot do it without the lime first being present. And if they can produce chalk from limestone, by rodentia, or gnawing, it is simply an act of transformation, and in no wise is it the act of production.

The fact of so many animals having been found in one spot, at Port Kennedy, goes far to prove that all were terrified, through instinct, at the approaching storm, and awaited their destruction through fear. If they had not had the sense of fear, we probably would have found the fossilized bones of each in separate localities. All geologists speak of fossil-bearing rock, but maintain that the process of its formation was gradual, and they further maintain that such rock always was formed by a small insect at the bottom of the sea, and is so forming at the present time. If this is the case, how could such a vast collection of animals, many of which were of the largest size, have met their destruction at one spot, and that so small that it required the act of compression to accommodate them? Limestone is a fossil-bearing rock, and such fossils were deposited by the waters of the flood.

My friend and neighbor, the late Oram Jacobs, of Norristown, has frequently told me that, when he worked at his trade of stone-cutting, in Kentucky, with others, they often found deposited the remains of nuts of different varieties,

such as walnuts, shell-barks, hickory-nuts, etc., in a quality of bastard limestone, thus proving that they had been washed there together with other detritus and crystallized into stone.

In summing up his report of the Port Kennedy bone cave, Professor Cope says, "The material in which the bones occur in the south is an impure limestone, being mixed with and colored by the red soil which covers the surface of the ground. It is rather soft, but hardens on exposure to the air." Here is undoubted evidence to prove just such a flood as Moses describes. Those bones which Professor Cope speaks of, whether human remains or those of animals, must have been sealed from the atmosphere at once, or they would not have been found to-day. Had human-beings or animals been destroyed and their bodies left for a slow interment by nature, those remains would have decomposed and no evidence would have been left of them at all.

Limestone, like coal, is found in nearly every country on the globe, and when in its pure condition it crystallizes into marble. "The finest statuary marble comes from Carrara and the island of Paros, whence the term 'Parian marble,' so famous among the Greek sculptors. The pure whiteness of Parian marble was thought to be especially pleasing to the gods; hence it was selected for the work of Praxiteles and other celebrated artists." Marble is colored in all shades and variegated in pleasing designs, to suit the taste of the most fastidious. A beautiful variety is obtained from Rutland, Vermont, beautiful specimens of which can

be seen in the Drexel Building, Philadelphia, in the corridor, entered from Chestnut Street. *Verde antique* is a variety of marble streaked with serpentine, which shading has been accomplished by vegetation having been washed with the properties now composing the marble, in which it was embedded, the juice or chlorophyl of the grass coloring it, in its natural or green color, in streaks.

Where the property known as carbonate of lime existed anterior to the flood is beyond conjecture. It may have existed in the interior of the earth, and, when the "fountains of the great deep were broken up," it may have been thrown to the surface. One thing is certain, it is found in nearly every country, and deposited in valleys, on what was the earth's surface previous to the flood. I have no knowledge of its ever cropping out of the mountain-tops, as having been of antediluvian formation. It is of greater specific gravity than earth, weighing one hundred and fifty-seven pounds per cubic foot, while clay weighs but one hundred and twenty pounds, which is the reason why limestone or any other rock formation has a body of earth on top, which, as quarrymen say, must first be "stripped" off. The mineral properties have percolated through the lighter earth, by rain, and solidified in a solid mass beneath the earth's covering. The waters of the flood in overflowing the earth deposited all limestone substance in the valleys, on the surface of the earth as it then existed, and carried vast quantities of the embryotic limestone at the same time into the ocean, which formed that much-talked-of limestone bed which our geologists speak of.

I will add one important fact to my amount of testimony already given, which is from the evidence of persons yet living, of an *animated fossil* having been found in a marble quarry in Montgomery County, Pennsylvania. If our geologists will please explain the presence and previous imprisonment of that species known as the genus *Batrachia,* and will give us a satisfactory solution according to their theory, we will be pleased to hear it.

My informant says, when he was a boy, living at home with his father, in Lower Merion Township, Montgomery County, that his father, Jacob Fisher, worked at tool-dressing for the quarrymen, who worked in what was then known, and is yet, by the name of "Henderson's quarry," the owner of which was Davis Henderson, and the foreman's name was Alexander Mullen; that they quarried and raised to the surface, from a depth of forty feet, a large block which was intended for one of the sections of one of the columns of Girard College, then in process of erection in the city of Philadelphia. On making a close examination as to its fitness for the purpose for which it was intended, a seam was noticed in one of its sides. Deeming it unfit, the foreman proposed that they should split it up into smaller portions. On opening the block at the seam already noticed, out rolled a toad,—yes! a genuine toad,—which, being left in the sun, soon showed signs of life, which may be said to have been a reinforcement to those which Noah had in his ark.

Here is a matter of more than ordinary interest,—a reptile encased in crystallized limestone, at a depth of forty

feet from the earth's surface, occupying a space only the same as a pattern would occupy in the sand in a moulder's flask, with no air-duct whatever to the earth's surface. Will our geologists say that that reptile was imprisoned in that solid limestone while the limestone was in its solid state, from the earliest period of its formation, which was the Pliocene period? There certainly was no opening, because that quarry was celebrated for its solid, compact quality of stone.

It is known to all naturalists that reptiles, such as snakes, toads, frogs, tortoises, etc., hibernate in winter time and remain in a torpid condition. Should that toad have been overtaken by the deluge while in that condition and encased in the sand at a low temperature, why would it not have remained in that state until it experienced a rise in temperature? We know that the temperature of the earth at that depth is about 43°, and it would have required at least 60° to have revived it. Then a winter of four thousand years to it would only have been equal to six months in its natural condition, because we see it was not a matter of time, but entirely a matter of temperature. We see vegetation varying, in putting forth in spring with the temperature; then why not the hibernating of those reptiles the same?

For the benefit of our readers we will at once disrobe the science of geology of some of its phraseologies and technicalities, and, instead of naming the Cretaceous Period, or the period of reptiles, or the Cenozoic Time, which they say was the age of mammals, or those which suckle their

young, which they say was before the Age of Man, we will at once indorse and sustain the Mosaic account as given in Genesis, and will prove that man also existed at the above period, when those animals were entombed in the "Port Kennedy cave," or *mammalian* cemetery.

We must not think, because the fossils of animals and reptiles have been found more frequently in limestone and marl formations than elsewhere, that they are not also buried underneath earth deposits of the same period as well. It must be remembered that limestone, marble, and marl are commodities of merchandise, and as such are removed from the place where they had been deposited by the flood, while the earth remains in a manner undisturbed. But we will now prove that the same inundation destroyed men and animals alike at the same time, and buried them beneath the earth so deep that they will be unknown until the morning of the resurrection. But we will add that animals largely predominated on this continent in proportion to man. I could add much more in proof of the deluge from fossils found in limestone, but think it unnecessary, as the amount already stated should convince even the most sceptical on that point. We will now examine the earth where there is no rock, for evidence of man's existence before the deluge.

I will here insert an extract from the *Independent Phœnix* of October 24, 1868.

"A PUZZLE FOR GEOLOGISTS.

"A very interesting and, in one aspect, a profoundly important discovery has been lately made at Antelope, a station four hundred and fifty miles west of Omaha.

"In digging a well for the railroad company, there was reached, at the depth of *sixty-eight* feet, a layer of human bones,—undoubtedly human, from the fact that there were a skull and jaw, as well as other bones from the extremities and the trunk. The excavators assert that in the process of digging they have found layers of bones in which the remains of elephants and tigers were unearthed, it being known to everybody that these animals are extinct species on this continent. It remains for the savans to determine whether these human bones were covered so deeply by a cataclysm, or were deposited there in prehistoric times, to confirm or correct current scientific opinion, both as to the origin of the human race and the time of its existence on this planet."

Here we have additional evidence of man having existed contemporary with animals of the antediluvian type; we think, however, that, if the earth, or at least this continent, could be denuded of the débris which the deluge deposited, and the carcasses left bare, there would be such an exhibit of skeletons as would appall the heart of an Amazon. We doubt not that there were large bones found which belonged to the anatomy of antediluvian animals, but we doubt whether there were any belonging to the elephant or the tiger; those animals are indigenous to the tropical

climate only. In the "Port Kennedy Bone Cave" we cannot too much admire the labors of C. M. Wheatley and Professor E. D. Cope in classifying, the remains of what they discovered. Mastodon remains might easily be mistaken for those of the elephant by those unacquainted with the science of palæontology; but I have given the extract as I have received it, and from the depth of the interment it adds additional proof of the deluge.

CHAPTER XVI.

Glacial Striæ—Corrugations in the Vertical Rocks along the Hughes River in West Virginia—Of Clean and Unclean Beasts—Animals Locked in the Polar Regions from the Equator—Rock found in Flat Rock Tunnel—Strata of Deposit in Bridgeport, Pa.

I WILL yet insert the following from Professor Steele's work, page 210, relating to "*Glacial Striæ.*"

"A careful examination of many of these boulders shows us that they are covered with parallel grooves (*striæ*). These have obviously been caused by the scraping of the boulders on the solid rock, as if the drift material had been carried forward by an irresistible force, since the 'bed rock' (the rock in place) in the regions covered by the drift is polished and grooved in a similar manner. These striæ consist of long, straight, parallel lines,—furrows a foot broad and several inches deep, or scratched fine as a pin would make. The surfaces of hard rocks, as quartz, are often polished smooth as glass, while the marking only can be seen with the microscope. The general course is that in which the boulders have been carried,—*i.e.*, from north to south, varying generally not more than 20° east or west. There are frequently two or more sets of striæ, differing a little in direction. On the Platte River there

is a ledge of limestone so regularly planed that, without further working, it can be used for caps and sills in houses. At Marquette, on Lake Superior, there are surfaces as uniform as if worked to a level and afterwards rubbed with sand-paper."

Let us examine carefully what we have written. There never was an effect produced without a cause to produce it. Professor Steele says they are boulders. If so, we presume they are granite and of antediluvian formation. He does not say whether they have been carried up mountain-sides. But from a wood-cut, Fig. 101, page 209, of the same article, showing a "View near Gloucester, Mass.," he represents them on level ground. Might not those boulders have been carried or moved from their "parent ledges" (as he describes them) by the waters of the flood, and marks and scratches be found in them yet to-day as distinctly as though they had been carried there at a more remote period by glaciers? The markings on them no doubt would be found the same to-day, and perhaps more plainly because while they were being heaved around by the flood they were only in a partially crystallized condition.

The professor says, "These striæ consist of long, straight, parallel lines,—furrows a foot broad and several inches deep, or scratches fine as a pin would make." He also says, "At Stony Point, Lake Erie, the limestone lies exposed above the level of the water. The bed is planed down smooth as a floor, and at one place the parallel grooves strikingly resemble the deep ruts produced by a loaded wagon."

Here we find a limestone formation which has crystallized since the flood, which lies exposed above the level of the water The bed is planed down smooth as a floor, and at one place the parallel grooves strikingly resemble the deep ruts produced by a loaded wagon. Can we not account for that "planing down," or wearing away, by the water rising at times and passing over the top, and when the rock was in a partially crystallized condition wearing or smoothing it off, in place of the mythical glacier? We all know that limestone is rapidly taken up by water, and that it combines with it, and when carried away by water it is deposited at other places in the form of stalactites, such as are found in the Mammoth Cave, in Kentucky.

In a foot-note to the same article, by *Hitchcock*, Professor Steele says that these striæ will ascend hills and mountains, even thousands of feet high. He says, "Mt. Monadnock, of New Hampshire, is an illustration of these statements. It is a naked mass of mica schist three thousand two hundred and fifty feet high," and "from top to bottom it has been scarified on its northern and western sides, indicated by striæ, or furrows, running up the mountain-sides," also "deep furrows and other phenomena" on the top of said mountain. Here is an observation which would have brought Cicero to his feet in the Roman Senate. The idea of a glacier rising and ascending over a mountain three thousand two hundred and fifty feet high, and furrowing or scratching the side of that mountain, during its journey, is really hard to comprehend. I know but little of the science of navigation, but I do know that, if a vessel draws

but twenty feet of water when loaded, it will remain at that draught. No matter what depth the water may be underneath it, the draught is governed entirely by the amount of water it displaces. We have never been permitted to see a glacier, but we think it would be governed by the same laws that govern a vessel, and would not sink in hollows and rise on hills and mountains, to be scratching the surface of the earth in its wake.

There are many things in this world which at times seem hard to account for. The mountain is represented as a naked mass of mica schist, which means "isinglass," mixed with a friable substance, which is not solid like granite. Our solution to that phenomenon is this: the mountain is marked on its north and west sides, where the force of the wind is most felt, and from an observation of my own—in company with Lewis Horning, of Philadelphia, and J. Bessey, of West Virginia (who was our guide), on an expedition up the "Hughes River" along the Staunton pike from Parkesburg in 1865—I form my conclusion. After we had rode probably thirty miles up the Staunton pike beside the Hughes River, we came to a wall of rocks skirting the river on the opposite side. At that point the rocks are entirely bare, and about as near at an angle of ninety degrees as a mason could build the walls of a house. The rocks appear to be of a quality known as, or much resembling, the Ohio clough stone, which is evidently of post-diluvian formation. Suddenly we came to a halt. "There," says Mr. Bessey, "do you see that?" "Yes, sir," was our answer. The object alluded to consisted of large corruga-

tions in the solid rocks on their vertical faces. We asked what caused it; the answer was, the wind did it. We rode our horses across the river, which was a small stream; and we could see the rocks hollowed out as nicely as though a stone-cutter had done it, and so deep were the markings that pockets had been worn in them, where loose sand could lie, and with every blast of wind it polished the rock out as nicely as sand-paper would have done it. The cavities were many of them at least six inches deep and of concave surface.

Where the wind has a sweep, it plays some curious, unaccounted-for pranks. Might not Mt. Monadnock have shared the same fate?

In concluding my zealous researches in support of evidence offered to prove the destruction of all living by the deluge, as described by Moses, I offer the following to the reader for his consideration.

We learn from the Douay Bible, Genesis, Chapter VII., commencing with verse 1: "And the Lord said to him, Go in, thou and all thy house, into the ark; for thee I have seen just before me in this generation.

"Of all clean beasts take seven and seven, the male and the female. But of the beasts that are unclean two and two, the male and the female. Of the fowls also of the air seven and seven, the male and the female; that seed may be saved upon the face of the whole earth.

"For yet awhile and after seven days, I will rain upon the earth forty days and forty nights; and I will destroy every substance that I have made upon the face of the earth."

It would appear from the foregoing that God did not so much intend to preserve the unclean beasts as those that were clean, because for those that were clean he provided sevenfold what he did for those that were unclean, and, at the period of their disembarkation from the ark, should they not have found food suitable for their sustenance, death would have been the result, which would have ended their career on earth, leaving no traces whatever of their previous existence except fossil remains.

Verse 21: "And all flesh was destroyed that moved upon the earth, both of fowl and cattle, and of beasts, and of all creeping things that creep upon the earth; and all men."

Verse 22: "And all things wherein there is the breath of life on the earth died."

Verse 23: "And he destroyed all the substance that was upon the earth, from man even to beast, and the creeping things and fowls of the air; and they were destroyed from the earth. And Noe only remained, and they that were with him in the ark."

The language in the Protestant Bible which I have before me is somewhat different, but the meaning is the same.

We see by the foregoing that God gave a preference to clean beasts, by providing sevenfold, so that if some should die of hunger, as, without doubt, they did, others perhaps would survive, leaving "seed upon the earth." The unclean beasts, no doubt, were taken into the ark when young, so that their ferocity had not yet fully developed itself.

And where could we look for their remains to be pre-

served better than in rock formations, coal-beds, and marl-pits, especially, which were formed by the flood, even to the polar regions. In north latitude sixty and seventy degrees great masses of the bones of the elephant and rhinoceros—animals of the hot regions of the equator—have been washed there by the tides from the equator during the flood, and their remains are now locked fast in Borea's embrace.

The inference drawn by our geologists that the north polar regions once teemed with tropical vegetation and abounded with animals indigenous to a like climate, because remains of a like character are found there at present, needs stronger evidence in its support. If such had been the case, would not a gradual climatic change have taken place? Would not the remains of tropical animals have decomposed under the rays of a tropical sun? And as that climatic change took place, would not such animals have sought a more congenial clime, and their carcasses have decomposed on the surface of the earth, in like manner as such decompositions take place at the present day where interment is neglected? No uneducated theorist will maintain that a huge animal, of whatever species he may be, will die and be subjected to the elements and become the prey of carnivorous animals, and his remains will be found thousands of years afterwards hermetically sealed and in a good state of preservation.

There is evidence, in all parts of the world, of the deluge having caused great changes in the surface of the earth, through rock formation; and if we are able—

To read the rocks aright,
With infinite wisdom scan,
Those "silent monitors of the past"
Proclaim the doom of man.

Geologists teach that granite rocks were among the first formations which took place during the Azoic period. I have not been favored with an extensive observation. My labors have been confined chiefly to the counties of Chester and Montgomery and a portion of Bucks, along a formation running northeast and southwest, through the townships of West Vincent, North and South Coventry, of Chester County, and Pottsgrove Township, of Montgomery County, Pennsylvania, along a well-defined outcropping of granite boulders, each of many tons' weight, as they now appear on the surface, embracing within their limits many miles of territory, in which are the celebrated quarry at the Falls of French Creek, all worn round on their upper surfaces by the waters of the deluge when they were in a partly crystallized state, and definitely marking heavy underlying strata, where millions of tons of excellent granite may be quarried.

There are a number of streams of water rising in the hills in said formation, which are tributary to the Schuylkill River, and, strange as it may seem, so much of those granite boulders as have been carried away by the water by erosion, amounting to many millions of tons of granite sand, now lie solidly crystallized in that formation known as "Flat Rock," at the Falls of Schuylkill, in the river-bed and hill-sides near Manayunk, Pennsylvania, having

been carried a distance of nearly forty miles with the current of the several streams. I made that discovery a few days ago during my perambulations through Bridgeport, on the west side of the Schuylkill, opposite Norristown. My attention was attracted to a mass of rock of which the opposite illustration, from a photograph, is a correct copy. At first sight I was much astonished, knowing that it was not of the formation on which it rested. Not being an enthusiast respecting the "glacial theory," I could not understand how such a huge mass of rock could have been borne to that locality. On investigation I found it had been taken out of "Flat Rock" tunnel near Manayunk, and had been transported a distance of eight miles from its "parent ledge" by the employees of the Philadelphia and Reading Railroad.

It is a clean fracture from its parent formation, presenting a beautiful surface for scientific study. The bottom, or bed portion, is of quartz formation, with sharp, well-defined lines, not at all water-worn, but fitting together in the manner of rubble-work in masonry, which crystallized before the flood, distinctly marking the antediluvian period.

There is a deposit of clean, sharp gray sand, which has every appearance of having been disintegrated from the granite boulders before mentioned, fitting in the interstices between the quartz formation with the exactness and precision of a master workman, the curve suiting exactly to the contour of the quartz bed on which the granite sand rests. Next above it are alternate layers of sand of the same quality, intermixed with mica, showing the same

water-curve lines as underneath. Next above is a stratum of granite sand about five inches thick, intermixed with a slight amount of carbon, and on the top of this is a beautiful gray sand-rock formation, of the same quality and texture of sand, in delicate layers, distinctly marked with fine water-lines, each proving successive deposits during the flood, the whole now being as solid and compact as any granite boulder which may be nestled in its original place where put by the Almighty on the first morning of the creation. The whole distinctly marks these periods of time,—the Antediluvian, when the quartz bed formed; the Diluvian, when the disintegrated granite sand was deposited; and the Post-Diluvian, being the present period since the flood, during which time the sand has become a solid mass of rock.

What a satisfaction it would be if we could as easily locate a natural bed of limestone which crystallized or partly crystallized before the flood. But with all the immense deposits in different parts of the world, even in intervening strata in and between our vast coal deposits, all prove limestone to have been deposited by the flood and crystallized since that time. Limestone is carbonate of lime, and when perfectly pure crystallizes into marble, and as such must have been a finely-powdered substance before the flood. But its existence before that period is only a matter of speculation. No doubt that when the "fountains of the great deep were broken up" it was ejected from the bowels of the earth.

Other proofs of the flood can be had by sinking shafts,

A FRAGMENT OF THE FORMATION IN FLAT ROCK TUNNEL, NEAR MANAYUNK.

or wells, in Bridgeport, on the south side of the Schuylkill. I witnessed the operation. First we went through soil; then red shale, so called, in which were solidly-compacted water-worn stones, quite foreign to the earth in which they are embedded; lower down were alternate layers of sand and red shale, to a depth of at least fifty feet, before we struck water, the whole fifty feet being an alluvial deposit.

CHAPTER XVII.

The Age of Mollusks—The Period of Reptiles according to Geology—The German Mussel-Chalk and Keuper—The Ichthyosaurus, or Fish-Lizard of Antediluvian Origin—The Plesiosaurus—The Pterodactyl, a Flying Monster—The Dinosaurs (Terrible Lizards)—The Labyrinthodon—The Rhamphorhyncus.

OUR geologists designate the "Silurian Age" and the "Potsdam Period"—from the name of a town in New York—as the period when mollusks and small animals of the lowest order took shape, the remains of which have since been found as fossils in stone of recent formation. To describe them in their regular order, or to number them beyond saying that they are legion, would tire the reader. Besides, the argument they produce is of such an order that it can be more readily applied in support of the Mosaic account of the flood than suited to a fabulous description as given in Professor Steele's work (for full particulars see page 114). The sum total of the subject is that the fossil remains of mollusks, such as oysters, clams, etc., and animals such as lobsters, etc., are now found in stone of different kinds of recent formation. Did not God say that he would "destroy all creeping things wherein there was breath of life"? Inasmuch as it is a principle that nothing can be lost, might we not look for

their remains to be encased in sand, which hermetically sealed them, and since crystallized into stone?

The "Devonian Age" is next graphically sketched. It takes its name from the County of Devon, England. In that age fishes of five different types are supposed to have been originated. Various kinds of fossils are also shown of a higher order than those of the first or "Silurian Age."

Next they have the "Carboniferous Age," page 149. This age is so named from the abundance of coal formed in its time, of which we will speak in future. For the present we are only noticing mollusks, reptiles, and different species of animals according to their genera. The geologists tell us that embedded in the limestone of that period are found such fossils as crinoids, brachiopods, and fish remains. Plants are the characteristic fossils of the period. Everywhere the shales bear impress of the delicate traces of ferns, leaves, and stems depicted with the sharpest outlines.

And why should they not be? Did not the waters of the flood, with their sad havoc, wash all manner of substance and material promiscuously at one time, and deposit it as found to-day? If the remains of all animals had always been deposited on the top of the débris and exposed to the elements, they would have decomposed, and would not have been left as an index for us to-day to trace the destruction of the deluge. But they were wisely sealed from the air, and have fossilized, and to-day are "silent monitors of the past."

Our geologists next introduce the Mesozoic Time, mean-

ing the middle-life of geologic history and comprising the age or advent of reptiles.

"A new cycle now begins. The four grand old types of life remain, but they are presented under new and more familiar features. The four orders of vertebrates are at last complete. The air is purified for land animals. A flora arises capable of supporting a more abundant fauna. Birds, mammals, common or bony fishes appear; palms and flowering plants appear. . . . Aside from these general features, the distinguishing characteristic of the Mesozoic Time is the extraordinary development of reptiles. These animals astonish us by their vast number, gigantic size, and unwonted appearance. Through those antique forests enormous lizards forty to fifty feet in length dragged their ponderous bodies,—the modern representatives of which are inoffensive little creatures a few inches long that seek only to hide from our view in the grass."

Do we not yet have the alligator, which is a formidable representative of those lizards forty and fifty feet long?

On page 167 we find the "Triassic and Jurassic Periods of the Mesozoic Time," and, for brevity, I will only quote a foot-note which is appended to page 168, which is of German origin. "The *Bunter Sandstein*, or colored sandstone, the *Muschelkalk*, or mussel-chalk, and the *Keuper*, a miner's term meaning a group of red and green marls and shales."

Here are three distinct groups or formations presenting themselves, but all of them, in our opinion, such as the

flood would have produced. The sandstone, while in a disintegrated or uncrystallized condition, was colored by the coloring-matter or substance which had colored the waters of the flood in the manner that our creeks and rivers get muddy in time of high water at the present day, where red sandstone occurs. The mussel-chalk and marls were also formed by the flood, being deposits of sand and an immense deposit of grass and green herbage intermingling with the sand and depositing the chlorophyll or coloring substance of the grass in the sand, not only imparting color but adding fertilizing properties to the marl at the same time.

The limits of our work will not admit of an extended notice of all the "unclean beasts" which were destroyed by the flood, and we will refer the reader to Professor Steele's "Fourteen Weeks' Course in Geology."

On page 173: "The *Ichthyosaurus* (fish-lizard) is a striking illustration of a comprehensive type, having the general contour of a dolphin, the snout of a porpoise, the head of a lizard, the jaws and teeth of a crocodile, the vertebræ of a fish, the sternal arch of the water-mole, the paddles of a whale, and the trunk and tail of a quadruped. Its habits were doubtless aquatic, while, like the whale, it breathed atmospheric air, and was thus compelled to come frequently to the surface of the water. Its neck was short and thick, its head large, and its body twenty or thirty feet long. Its jaws had an enormous opening, some having been found with one hundred and sixty teeth, which could be renewed many times, as above each tooth was always

the bony germ of a new one. The eyes were often two feet in diameter."

On page 177: "The *Plesiosaurus* had the head of a lizard, the teeth of a crocodile, the neck of a swan, the trunk and tail of a quadruped, the ribs of a chameleon. Each pair of ribs surrounded the body with a complete girdle formed of five pieces, thus affording great facility for the expansion and dilatation of the lungs. The paddles were like those of a whale. Its tail was shorter than that of the ichthyosaurus, being only sufficient to act as a rudder in guiding the body. To compensate this loss and assist in propulsion, its paddles were much larger and more powerful. Its appearance presented a striking contrast to that of its more ponderous foe, the ichthyosaurus, whose attacks it could escape by sinking to the bottom, while its long neck reached to the surface of the water and maintained respiration.

"The *Pterodactyl* (wing-fingered) is represented as an apparent monstrosity, surpassing even the two reptiles just mentioned. It was so named because the bone of one finger was greatly expanded in order to support an extended membrane for flying. It was a true aërial reptile. Its wings resembled those of bats. Its bones were hollow, like those of birds, but it bore no feathers, and had a mouth full of teeth. Remains have been found indicating a spread of wing of not less than sixteen feet; but the usual species of the Liassic did not exceed ten inches in length. Its ordinary position was upon its hind feet, walking upright with folded wings, or perched on trees, or climbing along cliffs with its hooked claws and feet. The

smaller ones lived on insects, but the larger probably pounced on struggling reptiles, or, diving into the water, preyed on fish. More than twenty species of the *pterodactyl* have been discovered in the Old World, but in the New there have been found only a pair of finger-bones at Phœnixville, Pennsylvania.

"The *Dinosaurs* (terrible lizards) were land reptiles of enormous size that roamed, elephant-like, over the river-plains or browsed in the forests of the Oölitic and Wealden Epochs. These included the megalosaur (large lizard), hylæosaur (wood-lizard), iguanodon, etc., which were huge monsters from forty to seventy feet in length. The megalosaur was carnivorous, having teeth curved backward like a pruning-knife, and with a double edge of enamel so as to cut like a sabre equally on each side.

"The *Labyrinthodon* was a frog-like quadruped often attaining the size of an ox. It is so named because the outer coating of its teeth was bent inward in intricate, mazy folds. Its head was protected by a helmet, and its body by a scaly armor.

"The *Ramphorhynchus*, the remains of which have been found in the quarries of Solenhofen, is a curious intermediate link between birds and reptiles. Its tail, a singular appendage, was long, reptile-like, and dragged upon the ground, while its foot-prints were bird-like. No wonder that palæontologists hesitate whether to class it with birds or with reptiles."

CHAPTER XVIII.

Age of Mammals, or those that Suckle their Young—Mammoths—Six Sketches of Mastodons found by a Farmer in a Bog in New Jersey—Brownstone—Bird-tracks in Brownstone—Greenstone.

We will next notice the "Cenozoic Time," or *recent life* of geologic history, comprising only one age, that of mammals, or animals which suckle their young.

Professor Steele terms it the Tertiary and Post-Tertiary period. "The mammoth," he says (page 225), "or *fossil elephant*, was about one-third larger than any known to modern times. A tooth in the Ward Cabinet, Rochester, weighs fourteen pounds. This animal wandered in great herds over England, thence to Siberia and across Behring's Straits into North America. Its remains are very abundant. Over two thousand molar-teeth were found in a few years by the fishermen of the little village of Happisburg. The islands in the sea north of Siberia are but conglomerations of sand, ice, and the tusks and teeth of elephants. During every storm, the waves wash loose and cast ashore this fossil ivory, which becomes a profitable article of commerce. Single tusks are found weighing over two hundred pounds. In 1844 sixteen thousand pounds are said to have been sold at St. Petersburg. The ivory thus obtained has been exported to China for five centuries, and yet the supply seems undiminished.

"In 1799 a fisherman discovered among the icebergs on the banks of the Lena an odd-shaped block of ice. Two years after, he found the tusks and flank of a mammoth protruding from it, and in five years the entire body became disentangled and fell upon the sand. He removed the tusks and sold them. Two years subsequent, Mr. Adams, of the St. Petersburg Academy, heard of the discovery and visited the spot. The people of the neighborhood had cut off pieces of the flesh for their dogs, and wild beasts had mangled it, but the skeleton was nearly entire. The skin yet covered the head; one of the ears, well preserved, was furnished with a tuft of hair; the neck had a flowing mane; and the body retained scattered tufts of reddish wool and black hair. Mr. Adams collected the bones, repurchased the tusks,—which were more than nine feet long,—and sold this unique specimen to the Emperor of Russia for six thousand dollars."

Here were found the remains of tropical animals locked up in the frozen regions of Siberia, from sixty to seventy degrees north of the equator, leading geologists to formulate an idea that that portion of the earth at one period of its history enjoyed a climate like that now found at the equator. Had that been so, would not all those carcasses which are now found have met the same fate as that of their congeners at the present day at the equator? Can you go to the equator to-day and find large deposits of fossil remains indigenous to that region which are of recent formation? Do not all animals that die there to-day soon decompose, so that they will be unknown fifty years hence?

We know that the animals at the equator were destroyed by the flood, and we also know that the rise in the waters of the flood was not less than three miles in height, which would have carried the carcasses north from the equator, by the natural flow of the tide, to just about the distance where they are now found; and the climate being cold, they would have frozen up in the manner above described.

On page 228, Professor Steele says,—

"The mastodon resembled the modern elephant, but had, in general, a longer body and more massive limbs. When discovered, Buffon called this animal the elephant of the Ohio. A single tooth, however, is sufficient to distinguish its remains. The grinding surface of a mastodon's tooth is covered with conical projections,—whence the name of the animal,—while that of the elephant is flat. Teeth have been dug up weighing seventeen pounds each, and tusks fourteen feet in length. Six skeletons were found in Warren County, N. J., by a farmer digging in a bog. Within the ribs of one of them, being evidently the contents of the stomach, were seven bushels of vegetable matter, which, on microscopic examination, proved to consist of cedar twigs, which probably formed the animal's last supper. Similar discoveries, and also the form of the teeth, prove that its food was roots, small branches, leaves, grass, etc.

"The mastodon was once common in the United States, and probably wandered in herds over all the country west of the Connecticut River."

Here again we find additional evidence of the flood. If

only one skeleton had been found in the bog, no one would have wondered at it; but the finding of six skeletons of the mastodon in one place of sepulture was an extraordinary occurrence, and nothing less than a calamity like the flood would have caused their destruction in that manner.

There are many more reptiles and other animals of antediluvian origin, but we fear we have already extended our description too far for the limits of our work, which was not intended to be a treatise on natural history.

Brownstone, which is well known to architects and builders, is a deposit by the flood, the same as limestone, but of a different kind of material. There is no doubt that much of it is of sand which has been worn from granite boulders through erosion, by the waters of the flood passing over them while in a partially crystallized condition. As I have before remarked, all granite boulders that I have ever seen are round on their upper surfaces.

The quality of brownstone varies greatly. Connecticut brownstone is much sought for the fronts of buildings, being soft and easily worked and having a fine, even grain; but it is readily destroyed by fire.

That it is of post-diluvian formation, the following from Professor Steele's work (page 184) will prove:

"*Bird-tracks.*—In the red sandstones of the Connecticut valley, numerous footprints have been found, described by Hitchcock as mainly the tracks of birds. The number of these footprints is wonderful. Tracks of many different sizes and species often traverse the same slab. The largest

tracks are fifteen inches long, and so deep as to hold nearly two quarts of water. They were made by a fowl walking erect and having a stride of three feet. Hitchcock estimates that it far exceeded the ostrich in size, being at least twelve feet high, and weighing from four hundred to eight hundred pounds."

What better evidence could we desire of those rocks having been at one time in a plastic condition? and even for many years after the flood they were still in a soft state, though sufficiently hard to support the weight of a species of fowl which existed at that time, weighing from four hundred to eight hundred pounds, the impress of the bird's foot being only a few inches deep.

We have brown sandstone of similar formation in this State near Hummelstown, and at Newtown, Bucks County: that occurring in the latter locality is interspersed with water-worn white flint stones, which were evidently worn round by the water at the bottom of some stream before they were carried and embedded among the sand where they are now found in a perfectly crystallized solid rock which is frequently used for abutments for bridges. Both of the last-named varieties are much harder than the Connecticut stone. The color imparted to all of them is through the waters of the flood becoming and remaining brown colored by being kept thoroughly mixed with red shale, or brown clay as it was then, and carried forward and deposited with the sand or embryotic brownstone.

We will next consider the formation of greenstone, or serpentine stone as it is called.

Professor Steele says (p. 56), "Serpentine is a sort of compact talc. It differs from steatite (soapstone) in being less granular and more compact in its texture, and in being sometimes separable into layers; it has a dull, resinous lustre. It was named from its mottled colors, resembling the skin of a serpent. Stoves have been made of it, as it bears heat well, when polished. 'Precious serpentine' has a rich, oil-green tint, and is highly valued for inlaid work."

We have two kinds of greenstone in Pennsylvania. That which Professor Steele describes as "mottled," resembling the skin of a serpent, which bears heat well, and has a rich, oil-green tint, is the upper strata of the soapstone vein near "Lafayette Station," which I have already described. It has been used for building purposes to a limited extent at Ardmore, Montgomery County, Pennsylvania. While new, it presents a bright appearance, but it fades under the influence of the elements and becomes dull, and assumes a dark, ugly color. The soapstone vein can be traced by boulders lying on the earth's surface, which is a natural formation, and no doubt presented the appearance of soapstone only, prior to the deluge, in a partially crystallized state, but the passing waters of the flood have deposited substances with it, which have since developed into the formation above described.

There is a deposit of greenstone formation, running northeast and southwest through the counties of Delaware and Chester and extending into Montgomery, which is much used for building purposes. Among the buildings constructed of it is the Academy of Natural Sciences in

Philadelphia. It is not mottled, and cannot be named after that natural enemy of mankind. It has a grit and texture much like those of Connecticut brownstone, and has veins or seams through it, to some extent, rendering much of it valueless and unfit for use. These seams may be traced to the following cause: The base of Connecticut brownstone is sharp sand, and its color has been added by the waters of the flood having been mixed or colored brown by an admixture of red shale, or brown earth, which added to it not only imparts color, but causes a softer consistency. The coloring substance of greenstone is chlorophyll, which has been added by grass deposited with the sand, and the veins that are in the stone have been caused by the fibrous portion of the grass, which has been deposited with it. It holds its color, and does not become ugly under the action of the elements, as the mottled or "serpentine" does.

To further illustrate the subject, it is known that when grass is mown for hay it is green and full of "sap," as farmers say, which sap is a property known in science as chlorophyll, being the coloring property of grass. When grass is cut for hay and exposed to the sun, the liquid portion of that chlorophyll is absorbed by the sun and carried into the atmosphere, but the solid portion of it remains in the hay. When, however, the grass was carried simultaneously with the sand by the flood and deposited in its natural green state, and kept wet for a length of time, the chlorophyll combined with the sand, and being at an early day covered by a stratum of earth, it remained hermetically sealed from the atmosphere and crystallized into

stone in that condition. Its mottling, resembling that of the skin of a serpent, as Professor Steele says, is further proof of that fact.

The veins through it, which Professor Hitchcock describes as having occurred by its "shrinking or cooling from a melted, or dried from a moist state," were formed by the solid or fibrous portion of the grass in their transformation in the body of the stone. The irregular distribution of the color is further proof of our description being correct. The stone is susceptible of a high polish.

CHAPTER XIX.

Formation of Coal—The Mythical Ferns—Trees Rooted in the Soil forming Coal-beds.

MUCH has been written by geologists on this subject, and the most fanciful ideas have been advanced to cause the human imagination to speculate and advance theories regarding that which is a very simple production of nature. A plain, comprehensive view of the matter would seem to them entirely too superficial and lacking depth of meaning. It seems to afford pleasure to geologists to surround that which should have been easily understood a century ago with ideas that will require another century to understand. On page 154 of Professor Steele's work he introduces the *Carboniferous period.*

"*Location.*—The great coal-beds of the country lie in six detached areas, as seen in the Frontispiece. They are styled respectively the Rhode Island, Appalachian, Michigan, Illinois, Missouri, and Texas coal-fields. The Rhode Island is the smallest, and comprises an area of only 1000 square miles. The Missouri is the largest, and covers 100,000 square miles.

"*Kinds of Rock.*—The Carboniferous period was inaugurated by the formation of a great conglomerate sandstone known as the Millstone Grit. As it often contains thin

seams of coal, it is frequently termed the False Coal-Measures. During this era of convulsion, the fishes and ferns of the Devonian Age were buried deep beneath vast accumulations of lifeless sand and gravel. This was interrupted, however, by frequent times of quiet, when, for a brief interval, the land was partially clothed with vegetation. The coal-measures proper present stratified rocks of every kind,—sandstone, shales, limestone, etc. They can be distinguished from Silurian or Devonian strata only by the fossils. There is generally about one foot of coal to fifty feet of rock. The thickness of the coal-bed is at some places only that of paper, and at others from thirty to forty feet. The 'Mammoth Vein' exposed to view at Wilkesbarre, and worked at Carbondale, Mauch Chunk, Shamokin, etc., is twenty-nine and one-half feet thick. The Pittsburg seam is eight feet thick, and may be traced for a long distance as a conspicuous black band along the high banks of the Monongahela. The miners estimate that a coal-bed gives 1,000,000 tons to the square mile for every foot of thickness. Iron ore is also abundant. Iron pyrites (sulphuret of iron) is distributed either in nodules, often of many pounds' weight, or in thin seams, so as to greatly injure the coal. The best quality of coal contains a trace of this impurity, which gives the disagreeable odor of coal-gas."

A certain artist, after he had finished what he thought to be a very excellent picture, presented it to Abraham Lincoln for his opinion of its merits. Mr. Lincoln replied that, if any person wanted such a picture, he presumed it

would be just what that person needed. But we think that if any person wanted information regarding the formation of coal, the foregoing article would not suit him. How the formation of a conglomerate sandstone known as the "Millstone Grit" had anything to do with the production of coal, which is of vegetable formation, is hard to explain. "The coal-measures proper present stratified rocks of every kind,—sandstone, shales, limestone," etc. Does this not prove it to be a deposit of the waters of the deluge?

"The thickness of the coal-bed is at some places only that of paper, and at others from thirty to forty feet."

Is not that additional proof of its having been carried there and unequally distributed by the flood?

But, they tell us, there could not be sufficient vegetation on the surface of the earth at any one time to produce the amount of coal now found embedded under its surface by a cataclysm or deluge.

On page 155 of Professor Steele's work he adds a foot-note, which he copies from Winchell's "Geological Sketches:"

"The amount of vegetable matter in a single coal-seam six inches thick is greater than the most luxuriant vegetation of the present day would furnish in twelve hundred years. Boussingault calculates that luxuriant vegetation at the present day takes from the atmosphere about half a ton of carbon per acre annually, or fifty tons per acre in a century. Fifty tons of stove-coal spread evenly over an acre of surface would make a layer less than one-third of an inch. But suppose it to be half an inch, then the

time required for the accumulation of a seam of coal three feet thick—the thinnest which can be worked to advantage —would be seven thousand two hundred years.

"If the aggregate thickness of all the seams of coal in any basin amounts to sixty feet, the time required for its accumulation would be one hundred and forty-four thousand years. In the coal-measures of Nova Scotia are seventy-six seams of coal, of which one is twenty-two feet thick, and another thirty-seven."

If figures are accurately computed, they are stubborn facts. But we think this foot-note by Boussingault which Professor Steele has added does not help him much. "Boussingault calculates that luxuriant vegetation at the present day takes from the atmosphere about half a ton of carbon per acre annually, or fifty tons per acre in a century." He must bear in mind that the earth presented a greater amount of land surface before and after the flood than it does at the present day; and that the growth of vegetation before the flood is supposed to have been much greater than at the present time, for man, with his ingenious devices, such as railroads, requiring ties, did not exist anterior to the flood. Again, a period of sixteen hundred and fifty-six years had elapsed from the creation to the flood, and very many of the trees were far more than one hundred years old, growing up and falling down beside those of more recent growth, each having an average of perhaps seventy-five years to draw sustenance from the atmosphere, in place of a luxuriant growth of one year. Again, Boussingault says, "If the aggregate thickness of all the seams of coal in any

basin amounts to sixty feet, the time required for its accumulation would be one hundred and forty-four thousand years." Correct, Mr. Boussingault; that would be the exact time required, if the whole earth were covered to a depth of sixty feet; but when we consider that there is perhaps not more than one square mile in fifty which is underlaid with coal, we see that a period of two thousand eight hundred and eighty-nine years would have produced the amount, and we claim a period of four thousand years since the flood. I did not have Euclid for a preceptor, and if I have erred in my calculation I offer that fact as an apology.

It would tire the reader, perhaps, to follow Professor Steele through the Carboniferous period of his work, and I will notice only some of the more prominent characteristics.

On page 156, he says:

"*The Ferns.*—Ferns, which to-day creep at our feet, then towered into stately trees, with trunks a foot and a half in diameter. They are abundant fossils, and doubtless contributed most to the formation of coal."

I have frequently seen the impress of fern-leaves in coal, but they were of the size of the fern-leaves of the present day. I think that if the leaves had been in proportion to the trunks which Professor Steele speaks of, it would have been very difficult to find a perfect impression left in coal now being mined, from the fact of the water rolling and piling all timber and vegetation promiscuously together. The only impressions of fern-leaves which I have ever seen

in coal are those of a variety common at present on the banks of Mill Creek, in Lower Merion, Montgomery County, Pennsylvania, of a somewhat coarse, stout growth, the leaf, not large, but of heavy proportions, exactly fitted to leave such impressions as those in question. I have examined a number of cross-sections of coal such as is considered by coal dealers of the best and purest quality, and have often counted the rings, as they are called, indicating each year's growth. The degree of curvature in the outside ring would very often show the remains of a tree three and a half feet in diameter, and from its weight (anthracite) I am certain it was of white oak, or some other wood equally solid, which would not weigh less than sixty pounds per cubic foot, while a cubic foot of solid bituminous coal, which is the product of pine timber, would not weigh over fifty pounds. I think the trunk of a fern-tree might be considered a "light weight" for a base to form coal from. Ferns, or even the cone-bearing trees which they speak of, would not supply the anthracite coal of the present day, weighing, as it does, sixty pounds per solid cubic foot. The geologists may argue that such vegetation perhaps has had other substances of a more solid character deposited with them to draw from; but this is not likely, since they add other vegetation, such as reeds, etc., which are of a less solid character.

The question may be asked, what information can be gathered which shall guide us to a correct opinion regarding the formation of coal, by reading what our professors and teachers have advanced on that subject? The accounts

of those mythical ferns which they say grew to the size of trees, measuring one and a half feet in diameter, read much like fairy-tales, which are ofttimes told for the amusement of children. In fact, if they were regarded as such, the world would be benefited thereby.

Perhaps the best thing that could be done would be to eliminate that portion from their work entirely, and start with a more reasonable solution of the subject.

All the information I can gain by reading the foregoing essay is the fact that "the coal-measures proper present stratified rocks of every kind,—sandstone, shales, limestone," etc., which are all of post-diluvian formation or such as have crystallized since the flood. If they had added such granite formation as that found at "Ringing Rocks," Montgomery County, Pennsylvania, I should have been at a loss to find a satisfactory solution.

On page 156 of Professor Steele's work we find the following:

"Trunks of trees, erect or prostrate, appear with their roots yet embedded in the layer of clay, the very soil in which they grew, underneath the coal. These fossils reveal to us most perfectly the vegetation of the period."

Here we have undoubted evidence of timber being the base from which coal is formed, and the fact of its being found in the mines, firmly rooted in the soil, strengthens our belief in the theory that the coal deposits were formed by Noah's flood. Such fossil-rooted trees as are to-day found in the soil stood on that very spot in all their stateliness when the cataclysm took place, and other trees were

brought by the waters and deposited with them in a "prostrate" condition.

It only goes to add further evidence as to the immense amount of forest timber that then existed. In 1870, while I was travelling through the coal regions, my business brought me to the office of a prominent coal company in Scranton, and in the corridor lying just outside of the office-door entrance was a beautiful specimen of anthracite coal, in the form of the stump of a tree, with roots attached to it not less than eighteen inches long. The body of the tree was about two and a half feet in diameter, thus showing a remarkable specimen of fossilized timber in the form of coal; but that was an exception, and not the rule. I will venture to offer an opinion that there never was the stump of a tree found firmly rooted in its natural position in any soil except that of the lowest strata, which stood there when other débris was washed with it; and if trees with roots attached to them are found in the upper strata of coal, they were uprooted and carried by the waters of the flood and deposited where found, but not firmly rooted in an upright position, because I have never yet found any soil on the surface of the bed or strata underlying either of the upper veins. Where the coal and mineral substances come in contact with each other, the result is always the formation of slate.

CHAPTER XX.

The Mythical Ideas of Geologists regarding the Advent of the Carboniferous Period—Lecture Delivered in West Chester.

I HAD thought of dismissing Professor Steele's work so far as quoting from the "Carboniferous Age" is concerned, but here are extracts from pages 150 and 151 which cannot be passed unnoticed; although he cannot but admit himself that they are entirely hypothetical, and have originated from an imaginative brain, and if he were called on for existing proof might find trouble to produce it.

"The pressure of the waters in the Atlantic and Pacific Oceans gradually deepened their beds, and produced a corresponding uplift of the future continent, so that after a time the water drained off the site of the present Southern and the Middle States, south of the coast line, against which the warm water of the Gulf had beaten so long. The low muddy tracts (the former sea-bottom) became a wide extended marsh, warmed to a tropical temperature by the internal heat. The atmosphere, dense with moisture, and containing, in the form of carbonic acid, all the carbon now locked up in the coal-beds, was rich in vegetable food. These favorable conditions rendered the earth a very greenhouse, fit to teem with luxuriant vegetation.

"This same acid, however, would have been fatal to air-breathing animals. Hence, before they could be introduced, the atmosphere must be prepared for their use.

"Here came a pause, as it were, in the progress of the animal life of the world. The plant must purify the air for the animal. The all-creative Hand, suiting the means to the end, at once covered the land with a new and abundant flora. Forests of strange form and prodigious size sprang up as if by magic to meet this new demand of Nature. No change of climate varied the productions of the ground, but everywhere flourished the same tropical growth. The crust of the earth was unsteady, and frequent elevations and depressions alternated. At one time it was lifted up to be covered with vegetation, and at another sunk, with the ruins of the forest, below the incoming ocean, to receive a deposit of sedimentary rocks. The theatre of these repeated changes was the whole of the present coal area, and much besides, from which the coal has been swept by subsequent denudation.

"During a season of verdure a vast amount of vegetable débris, such as leaves, limbs, fallen trunks, etc., accumulated, only to be overwhelmed by the flood of sand, pebbles, and mud washed in by the rushing waters.

"The peat-deposit gradually changed to coal, and the sediment hardened to shales, sandstone, or clay.

"Sometimes the water became deep and clear enough for corals or mollusks to exist, and Nature, suiting the new life to the new condition, populated the shallow sea with swarming millions, and there a limestone was interpolated.

Perhaps a hundred times in the course of the age this process was repeated, and as many alternate layers chronicled the changes in regular succession.

"In a Nova Scotia coal-bed Lyell found, in a portion fourteen hundred feet thick, no less than sixty-eight levels, showing as many different old soils of forests, one above the other, where the trunks of trees were still furnished with roots."

Here we have an overdrawn picture drawn from imagination, calculated only to confuse the mind and prevent the student from obtaining the remotest idea of the formation of coal. The picture represents the continent as at times uplifted far above the ocean and at other times "sunk, with the ruins of the forests, below the incoming ocean, to receive a deposit of sedimentary rocks." How can this be proven? I will make a sweeping assertion, and declare it only a picture in imagination. There is too much trifling with this matter. Men of profound learning, with titles of honor attached to their names, might more readily find a solution of the problem as to the formation of coal, through the account of the deluge as Moses gives it, than by framing delusive theories. There does not appear to be one of them that has made any advancement in scientific studies whatever who does not ignore the flood entirely. In conversation with a gentleman who is a disciple of Blackstone in regard to the fossils found in the Port Kennedy bone cave, I asked him whether he did not think they were deposited there by the flood. "Oh, no!" said he; "they were thrown up by volcanic action at the time

the limestone was thrown up,"—as much as to say that the interior of the earth was at one time the abode of mastodons, mammoths, elephants, etc. I consider that gentleman to-day far above the average in intellect.

If God had created man first, and endowed him with the average intellect of the present day, and had taken him into his counsel in the creation of things terrestrial and celestial, we think glaciers might perhaps be passing through the tropical regions every morning, if for no other purpose than for cooling the waters for drinking purposes for the day's use: most assuredly the fertile brain of man could have added something which the Almighty perhaps did not think of.

I have been carrying a description in my pocket, clipped from the *Local News*, of a very interesting lecture delivered in West Chester some years ago, by Prof. ——, on the formation of coal, which perhaps may interest the reader.

"So many points of interest to our readers were brought out in this lecture that we give it further mention to-day.

"In speaking of the query, How were these beds of coal formed? he stated that while some small beds may have been formed by the accumulation of vegetable débris at the mouths of rivers, the greater portion of them, and especially the larger beds, were formed from vegetable matter that grew on the spot where it is at present found. It is composed largely of the remains of tropical plants. It is found in the frozen North as well as in the middle and southern latitudes.

"There is no doubt but that there was once a tropical climate existing in places that are now locked in eternal ice. Portions of Greenland are underlaid with vast coal-beds, and there, as elsewhere, we find the vast remains of tropical plants, which grow and flourish nowhere but in tropical climates. These plants grew in the Carboniferous age at a time when the surface of the earth was but little raised above the surface of the sea; and, as subsequent subsidence of vast areas would produce the conditions of pressure under water, that would result in the formation of coal by the process of Nature's laboratory. Still later, some upheaval has served the purpose of raising these coal-fields to considerable elevation above the sea. The various grades of coal, from the peat and the softer qualities of bituminous coal to the hardest graphite, are only coal at different stages in its development. The more volatile substances, oxygen and hydrogen, are gradually given off, and a harder and still harder stage is reached, until at last graphite, or pure carbon, is the result."

It will readily be admitted that the foregoing is in strict accordance with the teachings of the geology of the present day, and no doubt the professor who delivered that lecture had graduated in that particular branch of science, and may have had his diploma in his pocket when he delivered the lecture.

We take exceptions to his statement that the vegetable matter grew on the spot where the coal is found. If so, nearly all of that substance known as coal would be found rooted in the earth.

He says, "It is composed largely of the remains of tropical plants."

Such is not the case in Pennsylvania. We have examined large quantities of it, and there is not the slightest vestige of tropical plants in it.

"It is found in Greenland, Siberia, and other portions of the frozen north, where once a tropical climate existed."

We doubt the existence of a tropical climate in those regions at any time. The coal found there with tropical remains was washed there by the immense tides at the time of the flood. Think of it! the waters running north and south from the equator with an additional depth of three miles, might well be supposed to carry everything with them and deposit the débris where now found. But I will venture to assert that in all that coal formation in Greenland not one tree can be found rooted in the soil.

"Still later some upheaval has served the purpose of raising these coal-fields to considerable elevation above the sea." That would be hard for the professor to prove.

"The various grades of coal, from the peat and the softer qualities of bituminous coal to the hardest graphite, are only coal at different stages in its development."

Allow me here to say that peat was formed at the same time as coal, but that, being full of loam and rich earth copiously mixed with fine vegetation, it will never become any nearer coal than it is at the present day, any more than the lignite or brown coal of Texas will ever become a good article of black bituminous coal.

The professor speaks of graphite becoming more solid,

or, rather, he says that bituminous coal is graphite in a partially developed state. He ought to know that graphite can be artificially produced by taking carbon, which is charcoal, and combining iron filling with it. Graphite is the product of wood changed into coal, with a small quantity of iron mixed with it. A beautiful demonstration of this can be had by going to Chester Springs and witnessing the oxide of iron in the water, and thence tracing its flow in a direction south of east, where it is received in a bed of coal, forming what is known as the Plumbago Mine, near Chester Springs. We think it could have no influence whatever towards improving it as coal, but that it would rather injure its combustible properties, since iron is a metallic substance, and as such retards combustion.

CHAPTER XXI.

Developments of the Anthracite Coal-fields of Pennsylvania by State Geologist Lesley—Professor Lesley's Observations near Chambersburg, Pennsylvania—Composition of Anthracite Coal—The Manner of its Deposit—Wyoming Valley—Massacre at Forty Fort.

PERHAPS the best idea to be had of the present formation of anthracite coal, as found in the coal deposits of Pennsylvania, can be gathered from cross sections of coal-mines in Wyoming Valley sent me by his excellency R. E. Pattison, Governor of Pennsylvania, and the Hon. A. D. Markley, M.D., State Senator of Pennsylvania, from reports of Professor Lesley, State Geologist.

Borings have been made with drills, beginning at the surface of the earth and continuing down, thus cutting through whatever the drill came in contact with, and the geological formation of the cuttings or deposits carefully noted. I have always been of the opinion that the Wyoming Valley, prior to the deluge, was a lake or basin, and that the current of the water, during the deluge, carried immense bodies of timber into that basin, of whatever varieties may have grown prior to the cataclysm, and deposited it where it is now found in the form of coal; and I find this opinion confirmed by the report of the State Geologist. We will first notice a report from a test made

by Professor Lesley near the mouth of Forest City Slope, situated at the northeast end of Wyoming Valley, and at the extreme end of the coal-measure.

I will next notice a boring made about twenty miles lower down the valley, and one made at the extreme southwest end of the valley, or nearly so, so as to prove an increase of the thickness of the seams of coal as the waters of the deluge carried the timber with them, and deposited it, just as would take place in a mill-dam or in a boom in a river.

We will first notice the Forest City mine. Beginning at the surface of the earth, they first went through a depth of dirt, or earth, of five feet, next formation four feet six inches of slate, next three feet two inches of coal, next ten inches of soft dirt, next one foot of fire-clay, next twelve feet four inches of slate, next four feet of sandstone, next three feet four inches of slate, next nine inches of coal, next seven feet seven inches of slate, next two feet seven inches of sandstone, next ten feet of slate, next eight feet two inches of sandstone, next seven feet eleven inches of slate, next two feet eleven inches of coal, next two feet one inch of slate, next eleven inches of coal, next three feet of fire-clay, next three feet five inches of coal, next twenty-five feet six inches of slate, next twenty-four feet nine inches of sandstone, next two feet five inches of slate, next ten feet two inches of sandstone, next five feet three inches of slate, next two inches of coal, next thirteen feet six inches of sandstone, next one foot one inch of coal, next twenty-five feet ten inches of slate, next one foot seven

inches of coal, next eleven inches of slate, next one foot six inches of coal, next five feet six inches of slate, next sixteen feet six inches of hard sandstone, next six feet eight inches of slate, next seven feet six inches of sandstone, next twenty-four feet of hard rock, next nine inches of coal, next four feet one inch of slate, next thirty-three feet eight inches of sandstone, next four feet eight inches of coal, next two feet three inches of slate, and finally twelve feet of pea conglomerate.

We have now gone down a total depth of three hundred and thirteen feet nine inches, and have passed eleven coal deposits aggregating in all twenty feet eleven inches, giving an average thickness of not quite one foot eleven inches.

We will now notice a test made in the vicinity of Taylorville and Hyde Park, at the Archibald Colliery, about twenty miles below the first test. The first deposit met with is a deposit of slate and slaty sandstone fourteen feet seven inches thick, next is a hard sandstone of eight feet ten inches thick, next is a deposit of slate twenty feet one inch thick, next is a coal-bed three feet five inches thick, next is a deposit of slate five feet eight inches thick, next coal four feet four inches thick, next slate one foot four inches thick, next coal two feet four inches thick, next slate eleven feet eight inches thick, next coal eight feet three inches thick, next slate seven feet thick, next sandstone two feet thick, next slate seven feet two inches thick, next sandstone five feet six inches thick, next slate fourteen feet thick, next sandstone twenty-one feet six inches thick, next slate twenty-six feet nine inches thick, next coal eleven feet

thick, next slate thirteen feet ten inches thick, next sandstone five feet seven inches thick, next slate twelve feet ten inches thick, next coal nine feet four inches thick, making a total depth of two hundred and seventeen feet, in which occur coal deposits to the amount of thirty-eight feet eight inches. It is to be noticed that we have passed only six beds of coal, averaging over six feet five inches each in depth, whereas our other boring of three hundred and thirteen feet nine inches had eleven veins, averaging about one foot eleven inches each, proving that the deposit of timber twenty miles down the valley was much greater than it was at Forest City, the first point of observation.

We will now proceed down the valley a distance of fifteen miles below our last scene of operation, to Plymouth, and will examine Plymouth shaft No. 4, which is about twelve miles above the extreme southwest end of the Wyoming coal basin. It will be observed that we have commenced at Forest City, the extreme northeast end of the Wyoming coal basin, and have travelled down with the current of the present flow of water to our last or Plymouth shaft observation, thus proving the increased deposit of coal by drifting timber at the time of the flood.

Our first observations are as follows, at Plymouth shaft. From the surface down to a depth of forty-seven feet seven inches there is dirt or earth, next slate nine feet two inches, next gray sandstone twenty-three feet three inches, next slate eight feet eleven inches, next coal thirteen feet, next dark sandstone ten feet nine inches, next gray sandstone one foot eleven inches, next fire-clay ten feet five inches,

next pebble rock forty-three feet four inches, next dark sandstone eighteen feet three inches, next gray sandstone nine feet four inches, next dark sandstone eleven feet two inches, next slate three feet ten inches, next coal one foot eight inches, next fire-clay five feet four inches, next light slate two feet seven inches, next coal eleven inches, next slate one foot two inches, next fire-clay one inch, next dark sandstone nine feet eight inches, next light slate five feet ten inches, next dark sandstone three feet one inch, next slate ten feet ten inches, next coal twenty feet ten inches, next fire-clay four feet eleven inches, next dark sandstone sixteen feet three inches, next coal forty feet nine inches, next fire-clay three feet three inches.

It will be observed that we have passed through a total thickness of three hundred and thirty-eight feet one inch, of which amount seventy-seven feet two inches is occupied by coal deposited in five veins, an average thickness of fifteen feet five inches for each vein. Here our State Geologist has produced proof which should at once startle the imagination of our modern professors in the science of geology as taught at the present day. They teach that the Carboniferous period was ushered in by the introduction of a rock which is extensively found in the coal regions and is known as the "millstone grit," and that certain vegetation soon followed, such as gigantic ferns, which grew to the prodigious height of fifty feet and measured eighteen inches in diameter, together with other vegetation of proportionate growth, suited to that period of the world's history, and all *firmly rooted in the ground where they grew*,

so as to form the vast deposits of coal where it is found at the present day,—a process which would have taken millions of years to accomplish; thus trying to disprove the first chapter of the Bible, and thereby taking an important step in the direction of condemning that sacred work entirely.

In order to decide impartially as to the probability of those mammoth ferns and other carbonaceous forms of vegetation having once grown, and having been *firmly rooted in the soil*, subsequently to form our coal deposits, it is only necessary to examine the beds on which the present coal veins lie and see how well they have been adapted for that purpose. We will take the Archibald Colliery first, that being the second one which I have described. We find the upper vein resting on a bed of slate five feet eight inches thick, which certainly would have been solid enough to support those immense ferns, but we think the soil in a formation of that kind would be insufficient to produce them of that growth.

The next or second vein of coal which we find as we go downward from the surface, rests on a bed of slate also, one foot four inches thick. The next or third vein of coal rests on a bed of slate eleven feet eight inches thick, which certainly would have been solid enough to support almost any kind of carboniferous vegetation. The next or fourth vein of coal rests on a bed of slate seven feet thick. The next or fifth vein of coal rests on a bed of slate thirteen feet ten inches thick; and the sixth or last bed is left by the State Geologist without naming a bed of any kind on which it rests.

We will now examine the Plymouth shaft No. 4, which I have described as situated in the lower end of the Wyoming Valley coal basin. Beginning at the surface of the earth and going downward, we find the first bed of coal that we come to thirteen feet thick, resting on a dark sandstone ten feet nine inches thick. Such a foundation as that would have been admirably adapted to grow ferns. The second coal vein we strike is one foot eight inches thick, resting on a bed of fire-clay five feet four inches thick. Certainly the fire-clay would have been more unctuous than the unyielding dark sandstone rock, but its fertilizing properties may be somewhat questioned. The third coal seam is but eleven inches thick, and rests on fire-clay also, which perhaps accounts for the vein of coal being so thin. The fourth vein of coal is twenty feet ten inches thick and rests on a bed of fire-clay four feet eleven inches thick. From the thickness of this vein we may adjudge fire-clay perhaps better adapted for raising ferns than we had previously thought. And surely the last coal-vein of forty feet nine inches, resting on a bed of fire-clay also, proves it to be just "the stuff" we were looking for. Words are insufficient to describe the growth of that primeval forest of tropical vegetation. To have the remotest knowledge of it, would have required our presence to view it and see for ourselves; and then, no doubt, like the Queen of Sheba after her visit to the courts of Solomon, we should have exclaimed that the "half had not been told of its vastness and beauty," so vast must have been the growth of that tropical vegetation out of fire-clay, to produce those forty

feet nine inches of solid anthracite coal of the present day. It looks like the delusive imaginations of a dream rather than like a fact on which to base a science to be taught in our institutes of learning in this present era of progress. We feel startled at the hypothetical ideas advanced not only concerning the formation of those heavy seams of coal, but also concerning that of their immediate deposits of slate, sand rock, pebble rock, fire-clay, etc., amounting sometimes to over one hundred feet between those seams of coal, the formation of which by any other agency than a cataclysm would have required more time than that familiar character "the oldest inhabitant" could have dreamed of. No; we are satisfied that those coal deposits were made by the great deluge which Moses has described, which carried vast forests of timber with it into the localities where coal is now found, and the fact that the heaviest coal veins are found in the lower portion of the Wyoming Valley proves beyond doubt that the timber deposit was carried onward by the current until checked in its course by the mountain. Subsequent deposits of fire-clay, sand, and pebbles which have since crystallized into rock, now form what our State Geologist has carefully marked in his charts of the borings. The slate, as every one knows, wherever found, is carbonate of lime intermixed with vegetation, and the presence of sulphur gives it its slate color.

I will also note a few observations in different tests which have been made by State Geologist Lesley, which are worthy of careful consideration. In No. 6, mine sheet No. III., No. 2 shaft, of Susquehanna Coal Co., at a depth

of fifty-five feet eight inches they struck a formation of slate, curly slate, coal, and stone. In the same shaft, at an additional depth of sixty-two feet six inches, they struck hard bone sandstone, which is sandstone with coal mixed through it; in some places we see slate and fire-clay mixed. In the Sloan Colliery, Delaware, Lackawanna, and Western Railroad Co., at a depth of one hundred and twenty feet four inches there is a deposit of black slate and iron balls to the thickness of thirty-one feet. Like formations are noticeable all over the coal regions, going clearly to prove the destructive flood which Moses has described, which occurred sixteen hundred and fifty-six years after the creation, before crystallization had taken place in all minerals as at present. The fact that timber is now found mineralized, and homogeneously combined with other mineral substances, proves that crystallization of said properties has taken place within the last four thousand years. If such a cataclysm were to visit the earth now, with our mineral substances crystallized as they are at present and deposited with the timber of the present day, the quality of coal which would then present itself would be entirely different from that which is now found.

It is also worthy of notice that specimens of fossilized timber bearing rare and beautiful markings are in possession of connoisseurs in different parts of the country, which much resemble the growth of the bird's-eye maple and variegated birch of the present day, and which may have been of a species of timber then growing entirely unknown to us. Such specimens have been taken out at

Plymouth, Carbondale, and other places in the coal regions; but they are the exception, and not the rule. In the whole forty millions tons of output of anthracite coal for 1890, I will venture to assert that not one hundred rare specimens were found.

It will be noticed that, with the many borings which have been made through the anthracite coal-fields of Pennsylvania, averaging in depths from one hundred and fifty to two thousand and five feet, not one drop of petroleum nor one foot of fuel gas has been discovered, thus proving that anthracite coal is a deposit of timber and other vegetation of a non-resinous or oleaginous character.

All credit is due our State authorities for establishing a State geological survey with an efficient engineer at its head, and tests should be made in all parts of the State to obtain sound information on the subject. Let us lay aside all visionary ideas, and establish a more solid basis to assist in promulgating the science of geology.

If tests were made, the world would be startled at finding what the contour of the earth's surface was anterior to the deluge. My own knowledge of its change of surface from what I have read, and from what I have travelled over, satisfies me that large deposits of coal lie buried in districts where it is as yet unthought of. Imagine the waters rising not less than three miles in height and sweeping over the surface of a new earth, with the avowed purpose of the Creator to cause the destruction of all living things: must not such a flood have carried everything before it? Hill-tops in many places were denuded and swept

into valleys, carrying timber and all vegetation with them. Such destruction and mixing up of things generally was never known before nor since. Professor Lesley, of the State Geological Survey, says, on page 82 of Professor Steele's work, in a foot-note,—

"Near Chambersburg, Pennsylvania, there is a fault twenty miles in length, and the depth of the dislocation is twenty thousand feet, and yet a man can stand with one foot on one side of this fracture and the other foot on the other side. What has become, then, of this immense mass of material twenty thousand feet in height? It must have been swept into the Atlantic by the denuding flood. If this had not been done, a bold precipice would have stood there nearly four miles in height and twenty miles in length. Long ages must have been required for water to effect such a denudation." No doubt long ages would have been required to cause that denudation under ordinary circumstances, but when God directed his cataclysm for the destruction of all living, that denudation took place in a short time. But it is a singular fact that there is not a geologist that will acknowledge Noah's flood.

Geologists tell us that the different varieties of coal are formed through age and pressure, and that in this way bituminous coal will eventually become anthracite. If so, should not the veins which were first struck be bituminous, that lower down be semi-bituminous, and the bottom veins anthracite? Such is not the case, however; it is all anthracite coal in those regions, and no better quality of coal is to be found anywhere on earth. The only difference,

coal-dealers say, is that coal from the bottom veins is more solid, more compact, through the pressure of the vast superincumbent weight. Neither depth nor age changes its character, but only its quality; we must look for another explanation of the existence of different varieties of coal.

Anthracite coal is the product of hard wood, such as hickory, oak, ash, beech, walnut, and perhaps species of hard wood not known at the present day. Bituminous coal is the product of pine and other resinous wood that grew anterior to the flood. Semi-bituminous, such as is mined at Lyken's, in Lykens Valley, Dauphin County, and at Shamokin, is the product of mixed timber, of hard and soft varieties. In further proof of this, I may remark that I suggested the idea to Mr. Samuel Berkstresser, of Mount Carmel, in 1870. "Yes," said he, "while we were digging a well near our house we came on the trunk of a tree, with bark attached the same as when growing, which had changed into coal."

In 1878 the author of this work, in company with P. Geary and others under Francis Baker, street commissioner, was working at grading a street in Norristown, when at a depth of perhaps fifteen feet, under a solid red formation, no doubt of post-diluvian origin, we discovered a quantity of coal from a deposit of timber, which was taken home by different persons and burned. It had much the appearance of anthracite coal. There being but a small quantity, of course it was less compact than would have been the case with a large bed overlaid by a heavy superincumbent weight. I mention this fact to prove that coal

may be found in districts where it is unthought of at the present day, and that it is unquestionably the result of a deposit of timber by the deluge.

But how came those different layers of coal to lie across those valleys and against those mountain-sides?

This is the answer. Could you and I have been transported to a near planet, or raised in some manner above the earth, and have watched the waters of the deluge sent as messengers of destruction, performing their mission, we should have seen a vast sheet of water carrying devastated forests on its bosom and depositing them in valleys, and perhaps mountains of sand and gravel would be rolled on top of the timber by the waves next following.

Perhaps the next sight to meet our gaze would have been millions upon millions of trees promiscuously borne along, together with smaller varieties of vegetation, which once formed the undergrowth of the forest, very much larger than the first. Following in its wake would perhaps be an immense quantity of pebbles, which had already been worn round, and which once formed the beds of vast lakes or rivers, over which coursed the waters of the antediluvian period. For weeks, aye, months, did that order of chaos continue, forming what are now the strata of coal, which is vegetation of conglomerate rock, which are those pebbles that once formed the bed of those primeval rivers and carbonate of lime, sometimes mixed with sand and smaller vegetation, which now form slate strata as much as twenty feet in thickness. Will our geologists claim that those animalcula which, as they say, formed *all limestone*

in the bed of the ocean under water, had much to do with that formation where it is at present found, especially where it is intermixed with sand? We think not. It cannot be argued that inasmuch as the specific gravity of hard wood or of mineral substances is greater than that of water, it could not have been carried to its present place of deposit by the flood. We have substantial evidence to the contrary from what took place in the Johnstown flood, where the water carried a steel safe weighing five tons a distance of over one-quarter of a mile.

Nothing could be more instructive to the scientist than to visit Mauch Chunk and ascend the surrounding mountains and study their formation. On the top of Mt. Pisgah you will find hundreds of tons of white, flint-like pebbles, some lying loose, others crystallized in rocks so solid that it would seem impossible to break them by any means whatever. I have particularly noticed through the Mahanoy basin, and especially near Mahanoy City, railroad bridges built with them that look even more solid than those constructed of the hardest granite. Specimens of these flints I have had in my possession for many years.

It would also be well worth the while of the scientific tourist to go to Nesquehoning, a few miles above Mauch Chunk, and gather specimens which have been taken out of the mountain at that place. There can be seen an admixture of carbon, flint-like substances, pyrites of iron, sulphur, etc., in variety sufficient to suit the tastes of the most fastidious, and all bearing evidence to a chaotic condition of nature which must have been brought about by

a cataclysm such as Moses speaks of. After visiting Nesquehoning, the tourist should board a train on the Lehigh Valley Railroad, crossing the mountains from Mauch Chunk in a northerly direction, and following the Lehigh River as far as White Haven, from which point he should continue on his journey to Wilkesbarre, and there view one of the grandest sights Nature has to offer. From the top of the mountain, at a point called Sugar Notch, the tourist looks down into the beautiful valley of Wyoming from a height of thousands of feet, upon the fair city of Wilkesbarre, "beautiful for situation, the joy of the whole earth," distance lending "enchantment to the view." I have travelled with horse and wagon from Newport and Nanticoke, at the extreme west end of the coal-measures, as far as West Pittston, through the Wyoming Valley, past Forty Fort and the beautiful monument marking the spot where hordes of savages, accompanied by eleven hundred Tories, under command of Colonel John Butler, butchered defenceless men, women, and children who had taken refuge in the fort, in the early part of July, 1778, while the strong men of the neighborhood were away doing duty as soldiers at a distance from home.

There is reason to believe that the entire district now known as the "Northern Anthracite Field" was once a lake of pure water, such as now flows in the North Branch of the Susquehanna River, from the fact that the Susquehanna flows with a rapid current from the north until it strikes the Wyoming Valley at West Pittston, about midway of the coal-fields, between Nanticoke and Carbondale,

then turns nearly at right angles and flows with a slow current in a westwardly direction until it leaves the valley which marks the extent of the coal-fields, after which the current is more swift until its confluence with the West Branch of the Susquehanna at Northumberland.

The waters of the flood no doubt came in the same direction as that in which the Susquehanna and the small streams of the Lackawanna Valley now flow, and deposited the débris now found in a crystallized condition through those valleys to a depth in many places of nearly one thousand feet. Imagine yourself standing at Sugar Notch, on the crest of the mountain, and viewing a beautiful sheet of clean water, thousands of feet below, with aquatic fowls and animals disporting themselves in undisturbed felicity, and you will have a faint idea of what this earth would have been had not sin entered it.

Taking the cars at Wilkesbarre and continuing up through the Wyoming Valley, thence up the Lackawanna Valley, we pass through a number of deep cuts, the sides of which present excellent opportunities for geological study. In many places can be found cobble-stones, worn round by the action of water in the bed of some river, no doubt in the head-waters of the Susquehanna prior to the deluge, and now firmly embedded in the earth at an unknown depth. The area of that prehistoric lake, or coal deposit, as it is now, is two hundred square miles, being about fifty miles in length and averaging about four miles in width.

CHAPTER XXII.

Volney's Opinion of Lakes once having existed in the West—Breaking of Reservoir above Girard College Grounds.

SINCE writing the foregoing article I have been examining "American Antiquities." At page 339 I find an article in support of what I have written regarding the Wyoming Valley having once been a lake. The author of that work, and the numerous authorities from whom he quotes, are of opinion that the waters of the flood came from the west, and consider that the great body of water known as the Pacific Ocean had much to do with furnishing the supply for the cataclysm of which Moses speaks.

The article in question is headed "*Disappearance of many Ancient Lakes of the West, and of the Formation of Sea Coal*" (or Bituminous, as it is now called).

This description of American antiquities is more captivating than any of the accounts already given, because we learn from it that where now dwell millions of mankind, with their multifarious works, covering the vales of all our rivers, many of which were once the bottoms of immense lakes, and where the tops of the tallest forests now tower towards the skies, or the spires of innumerable Christian temples gladden the heart of civilized man, once sported

the lake serpent, and the finny tribes, passing, like birds, in scaly waves along the horizon.

We refrain from rambling further in this field of fancy, which opens before us with such immensity of prospect, to give an account of the disappearance of lakes supposed to have existed in the West. In doing this, we shall avail ourselves of the opinions of several distinguished authors, such as Volney, in his Travels in America; Schoolcraft, in his Travels in the central part of the Valley of the Mississippi; and Professor Beck, in his Gazetteer of Illinois and Missouri, etc.

We begin with the gifted and classical writer C. F. Volney: although we do not subscribe to his notions of theology, yet as a naturalist we rank him in the highest class, and consider his statements and deductions well worthy of attention.

He begins by saying that "in the structure of the mountains of the United States exists a fact more strikingly apparent than in any other part of the world, which must singularly have increased the action and varied the movements of the waters. If we attentively examine the land, or even the maps, of this country, we must perceive that the principal chains or ridges of the Alleghanies, Blue Ridge, etc., all run in a transverse or cross direction to the course of all the great rivers, and that these rivers have been forced to rupture their mounds or barriers, and break through these ridges, in order to make their way to the sea from the bosoms of the valleys.

"This is evident in the Potomac, Susquehanna, Delaware,

and James Rivers, and others, where they issue from the confines of the mountains to enter the lower country."

The example which most forcibly attracted his attention on the spot was that presented by the Potomac, three miles below the mouth of the Shenandoah. He was coming from Fredericktown, about twenty miles distant, travelling from the southeast towards the northwest, through a wooded country with gentle ascents and descents. After he had crossed one ridge, pretty distinctly marked, though by no means steep, he began to see before him, eleven or twelve miles westward, the chain of the Blue Ridge, resembling a lofty rampart, covered with forests, and having a breach through it from top to bottom. On emerging from the wood, he had a full view of this tremendous breach, which he judged to be about three-fourths of a mile wide. Through the bottom of this breach ran the Potomac, leaving on its left a passable bank or slope, and on the right washing the foot of the breach.

The bed of the river at this place is rugged with fixed rocks, which are, however, gradually wearing away. Its waters boil and foam through these obstacles, and for a distance of two miles form very dangerous falls or rapids. The height of the mountains on each side of the river, and the existence of the rapids below the gap, and of the narrows for several miles above the immediate place of rupture, constitute sufficient evidence that at this place there was originally a mountain dam to the river, and consequently a lake above must have been the effect, *with falls of the most magnificent description, which had thundered in their descent*

from the time of Noah's flood till the rupture of the ridge took place.

Volney says that the more he considered this spot and its circumstances, the more he was confirmed in the belief that formerly the chain of the Blue Ridge, in its entire state, completely barred the Potomac's passage onward, and that the waters of the upper part of the river, having no issue, formed several considerable lakes.

"But when the great embankment gave way, in consequence of the weight of the waters above, or through attrition, convulsion, or whatever may have been the cause of the rupture, the rush of the waters brought from above all that stratum of earth now lying on the top of the subterranean trees above noticed.

"This must have occurred earlier with the James, Susquehanna, and Delaware, because their basins are more elevated; and it must have happened more recently with the Potomac, for the reason that its basin is deepest of all. . . .

"These ancient lakes explain why in every part of the basin of the Ohio the land is always levelled in horizontal beds of different heights; why these beds are placed in the order of their specific gravity; and why we find in various places the remains of trees, of osiers, and other plants. They also happily account for the immense beds of bituminous coal found in the western country, in certain situations and particular districts. In fact, from the researches which the inhabitants have made, it appears that the principal seat of coal is above Pittsburgh, in the space

between the Laurel Mountain and the rivers Alleghany and Monongahela, where exists almost throughout a stratum, at the average depth of twelve and sixteen feet.

"Coal is found in several other parts of the United States, and always in circumstances analogous to those we have just described. In the year 1784, at the mouth of the rivulet Laminskicola, which runs into the Muskingum, the stratum of coal there took fire, and burnt for a whole year. This mine is a part of the mass of which we have been speaking; and almost all the great rivers that run into the Ohio must have added their deposits thereto.

"The upper branches of the Potomac, above and to the left of Fort Cumberland, have been celebrated for some years for their strata of coal embedded along the shores, so that boats can lie at their banks and load."

Thus far we have given the views of the great naturalist Volney respecting the existence of ancient lakes to the west and the formation of the strata of sea-coal (bituminous) in those regions. We heartily indorse his views in some instances, but in others we beg to differ with him.

That there were lakes at different points occasioned by mountain-barriers before the flood, is certain from the large amount of pebbles which form the rock known as the Millstone Grit, or conglomerate rock, which lies embedded between the strata of coal at the present day; but that those mountain-barriers withstood the ravages of a devastating deluge for over six months, and afterwards were broken by some convulsion of Nature, seems incredible.

There never was a period in the world's history in which an opening could have been forced through them more easily, nor a means more potent than the deluge. The mountain-barriers were in a comparatively new condition, the time being but sixteen hundred and fifty-six years after the creation, and the body of water was so immense that it would not have been hard to force an opening or openings such as Volney speaks of. New, unsettled earth is more easily moved by water than solid ground after the minerals have crystallized. There is scarcely a chain of mountains on the face of the earth which is not broken here and there by what are called mountain-passes; and we believe that nearly all those passes or breaks were occasioned by the flood.

There is an example of this kind at Harper's Ferry, Virginia, where the Potomac River has forced an opening and is now running through a mountain-pass.

There is another example at Port Clinton, in Berks County, Pennsylvania, where the Schuylkill River has forced its way through the Blue Mountains.

To illustrate the force of water, I will insert here an account of an event which came under my notice in the winter of 1848–49. The city of Philadelphia had built a reservoir northwest of Girard College, and had filled it with water: in a short time the heavy embankment gave way; the water rushed out, and, keeping in a depression of the ground running southwest, passed through the north wall of the college grounds; then, crossing the grounds, it struck the south wall and carried that away also, subse-

VALLEY CREEK, AT VALLEY FORGE, LOOKING NORTHWARD.

quently finding its way to the Schuylkill at the Spring Garden Water-Words.

That was but a miniature and local cataclysm, compared with the flood which Moses speaks of; but there is one lesson to be learned from it: it is comprehensive in detail. But a flood covering the whole earth to the depth of over two miles, sent to work the vengeance of God, is incomprehensible. It would not have been wonderful had it swept every mountain from the face of the earth, and levelled every hill, in place of merely breaking through mountain-ranges. Hence, when Volney asserts that the mountain-ranges in question withstood the currents of the deluge, and that after that period the rivers formed lakes, overflowing the mountain-tops, with *thundering cascades,* and that at a subsequent period, through some convulsion of nature which he seems unable to explain, those mountain-barriers were rent asunder and those lakes emptied out, we beg leave to differ with him. If such a convulsion of nature ever took place,—and we think it did, judging from the pebbles which are found in crystallized conglomerate,—it certainly occurred at the time of, and was caused by, the flood. If those geologists who affect to despise the writings of Moses, as found in the book of Genesis, would think of these facts, they could not but subscribe to his account of the deluge as already given.

CHAPTER XXIII.

Trip over the Catawissa Railroad—Letter from Minister of Japan—Letter from Minister Ario of the German Empire—Bituminous Coal—Secret of Burning Coal with Economy—Petroleum—Slate Formation—Graphite.

To obtain further proof of the earth's surface having been more uneven prior to the deluge, it is only necessary to take the cars at Summit Station, above Quakeake Junction, on the Catawissa Railroad, and proceed westward to the beautiful town of Catawissa. In making that journey you are compelled to travel at least double the amount of miles that you would be if you could go by a straight line, on account of the deep intervening valleys which have to be crossed by running along the mountain-side first in a westerly direction, thence across trestle-work over the valley at an altitude of perhaps more than one hundred feet, thence in an easterly direction, rising by heavy grade until you gain the summit of the mountain, at which point you cross, to continue in the same manner until you have passed over seven deep valleys, which perhaps are in exactly the same condition that they were in prior to the deluge. These mountains are at least five hundred feet high in many places; and what seems strange to the tourist is the fact that if he travels through this section in an easterly direction as far as the Eastern Middle Coal Basin, he will find all those valleys filled up and underlaid with coal, and everywhere a good level road of sand and gravel around

Audenreid, Honeybrook, Jeansville, etc., so that he would not know it to be a mountainous country by its contour or present surface. It has all been filled in with débris carried hither by the deluge and transformed into the best quality of anthracite coal perhaps on earth.

I have written to many representatives of foreign countries, residing at Washington, D.C., and they all say they have coal in their respective countries.

The following is from the Japanese Legation:

"August 15, 1891.

"SIR,—In reply to your letter of the 13th addressed to the minister, I have to say that anthracite coal is mined in Japan in large quantities, although it is not of the best quality. There is a very large output of bituminous coal of a very good quality. Petroleum is not produced to any amount, and the quality is very poor.

"Yours respectfully,

"AIMARO PATS,

"*Secretary of Legation.*"

David Day, Chief of Division of the United States Geological Survey, says that anthracite coal is found in South Wales, France, Saxony, and Russia.

"GERMAN LEGATION, WASHINGTON, D.C.

"DEAR SIR,—In reply to your inquiry, we have anthracite coal in Prussia, but to what extent I cannot say.

"Yours respectfully,

"ARIO,

"*Minister of the German Empire.*"

I might add much more testimony of a similar nature, but think it unnecessary. What I have cited is sufficient proof that the flood extended over the whole earth, because the same results have been produced everywhere.

Much has been said by geologists in formulating a theory to suit their views; but the following brief extract I glean from the "Antiquities of America," page 355:

"It is said by those who have examined the immense coal-bed at Pittsburgh, that the very kind of trees of which coal was formed can be distinguished, as the beech, the maple, the birch, the ash, etc., lying in all directions through the whole stratum of the coal region."

Bituminous coal is the product of pine and other soft, light, resinous woods. To follow up the different kinds or qualities of coal would be as difficult as to name all the different kinds of timber that are now growing, or that grew prior to the deluge. It is enough to say that coal is found of different varieties in every country on the globe. I at one time had a half-interest in a tract of land in Gilmore County, West Virginia, on which there is a light vein of cannel coal cropping out. The coal is of the appearance of slate, and when you hold it in your hand it can be lighted with a match, the same as punk: it is of a dark slate color, and can be ignited in a grate without any kindling being used.

E. K. Orkney, mechanical engineer, says, "The State of Texas has a large stratum of lignite coal, or brown coal, from the Rio Grande to the Red River, cropping out on the surface in many counties. This much-despised brown

coal will do in many cases, if not all, for fuel, as well as black coal,—viz., for steam, household, and blast furnaces,—when mixed with charcoal, gas, etc."

Mr. F. L. Yoakum says, "I have analyzed thousands of specimens of our lignites in the last forty-five years, and find the average, as a mass, to consist in—volatile matter one-half, or fifty per cent., carbon one-fourth, or twenty-five per cent., incombustible, or ash, one-fourth, or twenty-five per cent. Sulphur and phosphorus are found in traces."

From the foregoing analysis it appears that but one-fourth of its component parts is of any use as fuel. Mr. Yoakum does not say what the volatile portion consists of; we think that it is probably gas, but it is not clear that it is hydrogen gas. The remaining portion being ash, and the coal being known as brown coal, we infer that there is a large amount of red shale mixed with the wood or timber that has crystallized with it, thus forming what is known as brown coal.

I will mention one other deposit of bituminous coal which I have seen, and will then dismiss the subject for the present. In 1865 I visited a point in West Virginia on the south branch of the Hughes River, in Ritchie County, near the mouth of Indian Creek, and, in company with other prospectors, examined a vein of coal which is no less astonishing in the manner of its deposition than it is in its quality.

The deposit is formed at the top of a mountain perhaps four hundred feet in height, between two rocks of a yellow,

sand-like texture, which stand apart from each other a distance of perhaps three and a half feet. The rocks are vertical, and appear to stand nearly as plumb as the walls of a house. The space between these rocks had a deposit of coal surpassing in quality anything I had ever previously seen: it is said to resemble the famous Albert Coal of Nova Scotia. It is extremely rich in oil: some of those present at the examination of the deposit said that they could express ninety per cent. of oil out of it, leaving only ten per cent. of solid substance, or refuse matter.

The question may be asked, how do we know that anthracite coal is the product of hard wood, and that bituminous is the product of soft, resinous wood?

The answer is, by the ashes left by the coal after its combustion. A good quality of anthracite coal will produce a quantity of pure white ashes, like the ashes of hickory wood; an inferior grade of anthracite coal will produce more ashes than the first, and these will be of a red color, on account of red shale having been intermixed with the coal by the waters at the time of its deposit. If you will wash your ashes when you are burning red ash coal, and take a small portion of these ashes between your thumb and finger, you will observe the presence of an unctuous substance: this is red clay which was deposited with the timber at the time of the flood.

But how do we know that bituminous coal is the product of soft, resinous wood? The answer is, by the amount of ashes produced, and by the gas and odor arising from the coal while it is burning. A relatively small amount of

ashes is produced by burning soft coal, and that is of very light weight. The same result is obtained in the burning of pine wood. The specific gravity of bituminous coal and that of pine wood are each less than that of anthracite coal and of hard wood.

I will now set forth a secret which I noticed that the President of the Cincinnati Gas Company also set forth some months ago, but I think his investigations concerned rather the manner of manufacturing the furnaces and ranges than the preparation of the coal for consumption. He says that a great saving in fuel-energy can be effected by the proper use of coal, and that he thinks that fifty per cent. of coal is wasted.

I will say, first have a chimney of dimensions sufficient to insure a good draught, then have your stove, range, or heater arranged with flues to insure a good draught also. Be careful to keep them clean. Have a good clean fire every morning. After the fire is started, make your coal damp, *but not wet*, and put it on the fire; when it has thoroughly caught, cook breakfast; then get pea coal, *dampen* it, as before, and spread it evenly over the fire; turn the damper up, so as to shut off the draught, and keep the stove or range closed, at the top, so that the gas that has been generated by the moisture in the coal shall be consumed. By following the above rules, a saving of one-third of the amount of coal ordinarily consumed can be effected every year.

The first artificial oil-well was sunk in August, 1859, since which time the petroleum product has increased until

now it ranks third in aggregate value of the exports of the United States.

It is by no means difficult to determine its source, in view of the fact that the simple act of expressing the richest bituminous coal will produce ninety per cent. of kerosene oil for illuminating purposes. That cannot be considered a fair average, however; but a reasonable average would perhaps be forty per cent. of all the bituminous coal in the earth.

One reason for the richness of the coal on the Hughes River may be that the vein is vertical: you can wheel a barrow on top of it; the rock stands vertically on each side, no rock either over or under you; and the vein is near the top of the mountain, with little pressure on it, beyond its own weight, and that of a small quantity of earth covering it; whereas all other veins that I have seen lie either horizontally or at an angle of inclination with a massive pressure on the top, of perhaps five hundred feet or more of rock and earth, just as it happened to adjust itself at the time of deposit. All beds of coal under a superincumbent pressure become more solid, the liquid portion being pressed out; but bituminous coal is not thereby changed to anthracite, any more than the skin of a colored man is changed to that of a white man by residence in the same latitude: each kind of coal has its place, and each is useful.

The minister of Japan informs me that both kinds of coal are found in Japan, and also petroleum, but that the quality is not of the best. Russia has petroleum; in fact,

it is probable that every country where soft coal is found has an abundance of petroleum, if it could but be discovered. Additional proof that petroleum is the liquid portion of bituminous coal is found in the fact that hydrogen gas for street-lighting is obtained from this species of coal, and that the same thing can be done with petroleum.

Judging from the vast growth of resinous timber in Georgia and the Carolinas, one may suppose that future investigations will develop large quantities of petroleum in those States, if the present growth of timber is an index of what grew there in antediluvian days; and we think it it; because pine of the quality known as Georgia pine never grew in Pennsylvania.

We have a variety of yellow pine in parts of Pennsylvania and New Jersey, but nothing to equal the Georgia and other southern pine in richness of resinous substances.

Here, too, is a vast provision of Nature to furnish light for every hamlet on earth, as well as coal to warm and cheer the fireside, which God beneficently provided for the posterity of Noah. The natural gas now so abundant in the earth is the hydrogen, driven out of bituminous coal by pressure.

The tourist in journeying up the Lehigh River will at once perceive a change in the rock formation as he approaches the coal regions. On the south side, or the left side as he journeys up the river, lies a lovely, fertile valley, through which flows a small stream known as Jordan Creek. That valley contains immense deposits of lime-

stone, which through sundry manipulations is made into cement, at a village called Coplay.

Farther up the river is a town known as Slatington, so called on account of the vast deposits of slate occurring at that point. I have been in two slate-quarries there, each of which yields excellent slate, from which mantels and other articles of use and ornament are manufactured. The peculiar color of the slate is due to the fact of vegetation of a light or smaller form finding its way to this point and depositing itself with the limestone, the base of all slate, and crystallizing into its present condition, the sulphur present changing its original green to its present pale black hue. This foreign deposit of vegetation with the limestone has imparted to the slate the peculiar cleavage, or quality of splitting, which it possesses.

That slate formation marks the point where the tourist is just entering the coal regions. Previous to the opening and working of American slate quarries, slates were generally imported from Wales. The Welsh slates are of a brown shade, there being a sufficient admixture with carbon to vary the hue between brown and slate color. The slates covering the Pennsylvania Hospital in Philadelphia were brought from Wales.

Green slates are quarried in New England: these when put on a roof with other slates form a very pleasing contrast. The green color is produced by the chlorophyll which was in the vegetation when it was deposited with the limestone, and which, in the absence of sulphur, has retained its shade. The woody fibrous portion of the vegeta-

tion has prevented solid crystallization of the limestone, whence its cleavage.

There are also red slates, ranging from a light to a dark shade, all variegated by the waters of the flood depositing foreign substances with the limestone. The red is the formation of waters deeply colored by red shale, and crystallizing with the carbonate of lime, in the absence of sulphur, it has retained its original color. It is well known that red shale formation is full of dividing seams, and of course when mixed with limestone this peculiarity still characterizes it.

This mineral is known under three heads,—black lead, graphite, and plumbago.

Plumbago, strictly speaking, is a chemical union of carbon and iron, in the proportion of ninety-one parts of carbon to nine parts of iron; but the black lead sold in shops is a mixture of charcoal and iron-filings. Graphite was formerly imported from Ceylon, Germany, England, and other places. The purest graphite comes from Ceylon. It was discovered in this country about fifteen years ago, in Chester County, near Chester Springs, in large quantities, on several tracts of land on the south side of the headwaters of Pickering Creek, and, strange to say, on the north side of those waters are found large deposits of iron ore. It would seem that the waters of the flood deposited timber on the south side of the valley, while iron-ore, being of greater specific gravity, found a resting-place on the north side of the creek, and by a slow process of nature, corrosion took place through water coming in contact with the

iron-ore which was deposited in the ground, and a union was formed with the coal or carbon deposited as above described, the result being the graphite which is now being mined.

Often in my boyhood days did I take delight in viewing the iron rust rising in the water at Yellow Springs,—so named from the color of the water,—or, as the place is often called, Chester Springs, where once the *élite* of fashion congregated to while away the summer months. A more pleasant place than it was then could scarcely be found, its attractions rivalling those of Bedford Springs, Saratoga, Newport, and even Cape May.

CHAPTER XXIV.

Iron-ore—Marl—Deposits in New Jersey—The Remains of a Sea-serpent found in a Marl Bed near "Mullica Hill."

IRON-ORE is a mineral, or, to use a more accurate term, a metallic substance, and is subject to the action of water, much the same as limestone is, with this exception, that when the salts of lime combine with water they impart a crystal clearness to it, whereas the oxide of iron gives a yellow color to the water; but both mineral substances are carried from place to place by the action of water. At present the process is so slow and gradual that it can scarcely be noticed; but at the time of the flood large deposits were carried by the angry waters and deposited with the drift in every conceivable position.

We are satisfied that the Pickering Valley and many other places received their deposits from parent beds of ore, because it is found deposited only in "nests,"—and not in veins. Such is also the case in the coal regions, where it is deposited at places with stratified conglomerate rock, in nodules, or small lumps, showing that it had been washed from a parent bed, or locality where the Creator had at first placed it, similar to a vast deposit or mountain such as is seen at Cornwall, in Lebanon County, Pennsylvania, or at

Pilot Knob and Iron Mountain in Missouri. No doubt many other metals are at the present day undergoing the same process of corrosion and erosion by the action of water.

Marl is a formation which I have never seen, and hence in speaking of it must be guided entirely by the observation of others. On page 50 of Professor Steele's work I find it noticed as "a mixture of clay and carbonate of lime. It is loose, friable, and generally full of small shells. It is valuable as a fertilizer."

We can deduct nothing from the foregoing description to enlighten us as to its fertilizing properties. The professor says it is "a mixture of clay and carbonate of lime." We know exactly how valueless clay is as a fertilizer, but we do not know just how valuable carbonate of lime would be, without first putting it in a kiln and changing it by the action of carbonic-gas generated by heat.

Those small shells we think might also be improved as a fertilizer if put in a kiln, the same as oyster-shells are, and subjected to heat so as to drive the carbonic-acid gas out of them, just as is done with the limestone, or carbonate of lime, so named because crystallization has not taken place.

Not being satisfied with what I read in Professor Steele's work, I wrote to a friend in New Jersey, and here is his reply:

"CLAYTON, N. J., 8th mo. 6th, '91.

"DEAR SIR,—Yours of the 4th is received and noted. I am sorry to say that I am not an authority on marls, and consequently am not competent to give you a scientific

account of them. The best authority I know of is Professor Cook, State Geologist of New Jersey. He has given the subject of marls a great deal of study, and published several accounts of their formation and analysis. By consulting some of his reports I think you could get the information you desire.

"My personal knowledge is limited to a small territory, and to their use as a fertilizer. The vein of marl in the southern section of the State runs in a northeast and southwest direction, through Salem, Gloucester, Camden, and Burlington Counties, and is supposed to have been the bed of some prehistoric river. The under-stratum of marl is usually darker in color, and is known as chocolate marl: the dark color no doubt is caused by mud or sediment. The greensand marl, that most valuable as a fertilizer, is found beneath an overlay of earth varying in thickness from two or three feet to such depth as to render its excavation impracticable.

"The origin of marl, or what it was before it became marl, of course I can only conjecture.

"I believe it to be a substance composed mainly of river bottom or mud with the remains of animal and vegetable matter. There are no pebbles or rocks found in it unless washed there. Such substances as bones, and teeth supposed to be *sharks' teeth*, are frequently found. I have seen large joints and sections of the vertebræ in a good state of preservation, also marine shells in great abundance. In some places shells resembling oyster-shells are two and three feet in thickness, so compact that they have to be

broken down with a pick or bar. These shells are as perfect in form as they ever were.

"There are several instances where the remains of prehistoric animals have been taken out entire and set up for exhibition. I think you can see one or two such specimens in the Academy of Natural Sciences in Philadelphia.

"I know of a specimen taken from a marl bed near Mullica Hill a few years ago that resembled the remains of a huge serpent, the head of which measured three feet across. The entire length was supposed to have been about sixty feet. Professor Morse, of Yale, obtained it, and I believe had it set up in the laboratory of the college.

"Most of the remains seem to have been those of marine animals; though no doubt some belonged to the land, as the behemoth and the giant kangaroo.

"I have no analysis at hand, or I would send it to you. But there are potash, lime, silica, and various salts found in it, that make it a valuable fertilizer where it is convenient and can be obtained at a reasonable cost.

"Yours truly,

"FRANK ISZARD."

My informant states that he is not an authority on marls; nevertheless, his letter explains some points of interest to the geologist. He says, "The greensand marl, that most valuable as a fertilizer, is found beneath an overlay of earth varying in thickness from two or three feet to such depth as to render its excavation impracticable." The presence in the marl of sharks' teeth, oyster-shells in great abundance,

the fossilized remains of the oft-heard-of "sea-serpent,"—the head of which was three feet across and its entire length sixty feet,—as well as of marine and land animals, intermixed with potash, lime (from the oyster-shells), silica, and various kinds of salts, goes to prove that they were deposited there by the increased tides occasioned by the flood. We cannot imagine that a serpent sixty feet in length could be caught and left buried there, high and dry above the ocean bed. Such a monster of the deep would find a resting-place in its native element when death should end its career. The shells and remains of marine animals, as well as the silica and salts of various kinds, are all the product of the ocean. And who can deny that the greensand, which is so celebrated for its fertilizing properties, is the result of the intermixture of sand with very large quantities of grass, such as now covers the "marshes and meadows" which you pass while journeying to Atlantic City? The saline constituents of the grass would add fertility to the mixture, and the green color would be imparted by the coloring substance in the grass known as chlorophyll, which, being buried under a covering of earth; and thus protected from the influence of the sun, has retained its original color. We know that the tides to-day come up the Delaware River and that they have always done so since the creation. Moses tells us that the waters covered the earth, so that the tops of the mountains were covered; what then could we expect but that the tide would cast out all living from the ocean? for God said, "I will destroy *all living;*" and in proof of this, we find marine remains at this day in

places where their presence would be hard to account for on any other hypothesis than that of the flood. In fact, the entire deposit of sand for which New Jersey is noted, and which forms its soil in the level portions of the State, was deposited there from the depths of the ocean during the increased tides of the flood.

CHAPTER XXV.

The Enchanted Mountain of Tennessee—Large Tracks of Human Beings and Horses in the Rocks—Tracks in Limestone Rock along the Mississippi and St. Louis.

BEFORE closing my work I will advance additional testimony as to the deluge which cannot be gainsaid.

In "American Antiquities," page 156, I find the following: "Among the subjects of antiquity which are abundant on the American continent we give the following from 'Morse's Universal Geography,' which in point of mysteriousness is not surpassed perhaps on the globe.

"In the State of Tennessee, on a certain mountain, called the *Enchanted* Mountain, situated a few miles south of Braystown, which is at the head-waters of the Tennessee River, are found impressed in the surface of the solid rock a great number of tracks, as turkeys, bears, horses, and human beings; as perfect as they could be made on snow or sand. The human tracks are remarkable for having uniformly *six* toes each, like the 'Anikim' of Scripture,—one only excepted, which appears to be the print of a negro's foot.

"One, among those tracks, is distinguished from the rest by its monstrousness, being of no less dimensions than six-

teen inches in length, across the toes thirteen inches, behind the toes, where the foot narrows towards the instep, seven inches, and the heel-ball five inches. One also among the tracks of the *animals* is distinguished for its great size: it is the track of a horse, measuring eight by ten inches,—nearly the size of a half-bushel measure, and perhaps the horse which the great warrior led when passing this mountain with his army.

"That these are the real tracks of the animals they represent appears from the circumstance of this horse's foot having slipped several inches and recovered again; the figures have all the same direction, like the trail of a company on a journey. Not far from this spot are vast heaps of stones, which are the supposed tombs of warriors slain in the very battle this big-footed warrior was engaged in at a period when these mountains, which give rise to some branches of the Tugaloo, Appalachicola, and Hiawassee Rivers, were in a state of soft and clayey texture.

"On this range, according to Mexican tradition, was the holy mountain, temple and *Cave of Olami*, where was also a city and the seat of their empire, more ancient than that of Mexico. To reduce that city, perhaps, was the object of the great warrior whose track with that of his horse and company still appears.

"At the period when this troop passed the summit of this mountain, the rock was in a soft and yielding state; time, therefore, sufficient for it to harden to its present rock consistency, is the argument of the great distance of time elapsed since they went over it.

"It is probable that the whole of these mountains out of which arise the branches of the rivers above alluded to were, at the time when the deluge subsided, but a vast body of clay; for even now the surface, where it is not exposed to the rays of the sun, is of a soft texture, capable of being cut with a knife, and appears to be of the nature of the pipe-stone.

"But these mysterious traces found on the mountain in Tennessee are not the only impressions of the kind. Mr. Schoolcraft, in his travels in the central parts of the Mississippi regions, informs us that on the *limestone strata* of rock which form the shores of the Mississippi and along the neighborhood of St. Louis were found tracks of the human foot, deeply and perfectly impressed in the solid stone. But two traces of this sort have been as yet discovered.

"The impressions in the stone are, to all appearances, those of a man standing in an erect posture, with the left foot a little advanced, and the heels drawn in. The distance between the heels, by accurate measurement, is six inches and a quarter, and between the extremities of the toes, thirteen and a half. The length of these tracks is ten and a quarter inches, across the toes four and a half, as spread out, and but two and a half at the heel.

"Directly before the prints of these feet, within a few inches, is a well-impressed and deep mark having some resemblance to a *scroll* or roll of parchment, two feet long, by a foot in width. Mr. Schoolcraft is of the opinion that these impressions were made when the rocks were in a plastic or soft state, because the impressions are strikingly

natural, exhibiting even the muscular marks of the foot with great precision and faithfulness to nature.

"But why there are no others going to and from these is unaccountable, unless we may suppose the rest of this rock at that time was buried by earth, grass, or some kind of covering."

We think, however, that but few human beings inhabited the earth at that period of its existence, and that the visits to such points must have been few and far between.

My reason for inserting this article at length is to emphasize the fact that "footprints" are found on the top of the *limestone* rock. Our modern geologists assert that "all limestone has been formed at the bottom of the sea, by animalcula depositing the sedimentary substance in the water, they having the power to extract such substance from the water."

In conclusion, I will say that the Old and the New Testaments should at all times be considered the word of God,—the first being prophetic, and the second a fulfilment of the first,—by every grade of mankind, whether they stand at the base or at the pinnacle of society, and that when any one attempts to alter its literal rendering he is helping to destroy its intended influence and assisting in moulding the destiny of mankind, so that they will not feel morally bound to treat the Scriptures in any other manner than as a book of human origin.

I refer here particularly to that portion of Professor Steele's work where he says (page 19),—

"The *Mosaic account of the creation* informs us that 'the

earth was at first without form and void, and darkness was upon the face of the deep.' With the first motion of nebulous matter, light was developed, or, *in the nervous language of Scripture*, 'God said, Let there be light.' Thus ended the work of the first day." He adds that "the word 'day' is *of course* considered not as a literal day, but as symbolical of a long period of time—ages—during which God was fitting this earth as a home for man. The idea of exact days of twenty-four hours each is neither required by the original nor by the scope of the narration."

In our opinion, if Moses—who got his knowledge from God himself, and was at the time rendering the words of Him who created all things—understood the meaning of the word day, when he said, "The evening and the morning were the first day," it is somewhat presumptuous on the part of our scientists to put a different construction on it, asserting that the Scriptures were written in a nervous manner, and that different constructions are necessary to suit the fancies of the educators of the present time.

I will here add that wherever the interior of the earth has been exposed to view by the operations of miners, engineers, and quarrymen, or even by deep railroad cuts, the rocks and other mineral substances present the appearance of having been originally in a plastic condition, and show joints and seams through them, caused by the shrinkage which has occurred during the process of crystallization, whether they are granite or quartz rock, of antediluvian formation, or limestone, greenstone, sandstone, or any other kind of stone of post-diluvian formation.

In a deep railroad cut in the Wyoming Valley, below Scranton, on each side can be seen cobble-stones, such as are used for street-paving, intermixed with earth, proving clearly that they were deposited there by a cataclysm such as Moses describes, which destroyed all living, except the chosen few which were saved in the ark.

APPENDIX.

"RINGING ROCKS"

AN EXAMPLE FOR STUDY BY THE GEOLOGIST, PALÆONTOLOGIST, AND SCIENTIST.

About four miles northeast of Pottstown, Montgomery County, Pennsylvania, can be found one of the greatest curiosities which man can view. Our grand old Commonwealth should at once make an appropriation, through the board of education, to assist in building a railroad from Pottstown to "Ringing Rocks," so that easy access might be afforded to those who delight in the investigation of paleology as well as the tourist for pleasure.

Our best instructors are those who analyze and simplify our studies. Moses, in narrating the account of the creation of the first day, simply says that "God said, Let there be light, and there was light," deferring it until the fourth day to tell us from whence it came.

In order to make the matter plain and comprehensive, I will analyze the subject and reason from facts.

Our geologists teach that the earth was in an igneous condition for a long period of time, during which it reflected its light to other planets, which period they term the Azoic,

meaning without life. Their next period they term the Silurian, from the ancient Silurians of England, when the lowest order of life came into existence, and if they continue to add to their visionary science, it will be a liberal education for one man to be able to comprehend one-half they teach.

THREE PERIODS OF TIME.

I can only comprehend three periods of time,—the Antediluvian, Diluvian, and Post-diluvian periods, or, in more plain language, before, during, and after the flood.

TOPOGRAPHY OF THE COUNTRY.

The topography of the country round about "Ringing Rocks" proves that "the mountains were brought forth" (not created) by the firmament on the second day by pressure, as already described on page 24, as explained in the creation of the second day when the firmament was created, from the fact of that range of hills known as ringing hills, where "Ringing Rocks" form a prominent feature, being entirely composed of granite, which form their interior, while the Schuylkill Valley is composed of clay and loam principally.

TRAP-ROCK.

On ascending the hill on the southeast side, large quantities of trap-rock are found, which oozed out of the hillside while in a melted condition over four thousand years ago, while that portion of Ringing Hills was transformed into a subterranean cauldron, which no doubt ignited through spontaneous combustion from immense quantities of sul-

phur and phosphorus which composed a portion of its interior.

MY LAST VISIT

to "Ringing Rocks" was made November 28, 1891, in company with Professor Bolger and two other gentlemen, for the purpose of securing a small portion of those foot-marked rocks for scientific purposes. Continuing our journey farther up the hillside, we came to a small stream of water containing large quantities of sulphur in solution, evidently issuing from the interior of the hill. A short distance beyond brought us to our destination.

There our eyes rested on a chaotic mass of blue granite boulders, covering perhaps two acres of ground, to which the pen of the ablest writer will fail to do justice, and which the imagination of man is entirely too feeble to comprehend, standing as we were between two epochs of time.

Those rocks are plainly marked by the footprints of men and animals, which must have been made when the rocks were in a soft, plastic condition, readily yielding to the weight of such beasts as trod on their surface. Think of it! "A new heaven and a new earth," with those footprints firmly fixed in those rocks when they were yet new and soft, as mementos of God's creation, so that "he that runs may read," be he ever so illiterate and incomprehensive. The man who can stand there and view that sight without it arousing his dormant spirit might well seek to try to establish a theory contrary to Scriptural reasoning. No wonder Professor Steele quotes St. Augustine as naming those days "ineffable days,"—that is, unutterable, not to

be expressed. He wished to speak of them in the superlative degree, and not as Professor Steele would have us believe he meant.

HOW CAME THOSE FOOTPRINTS

in those rocks in their present chaotic condition? My answer is that, when animals walked over them before the flood, they presented a level surface like a floor, and perhaps the present chaotic mass extended in a solid, unbroken body to a depth of fifty feet or more. Rocks which have formed since the flood, known as post-diluvian formation, composed of sand and carbonate of lime, are frequently marked with the footprints of animals of ordinary size as well as the tracks of large fowls. But granite of antediluvian formation marked with the footprints of mastodons, horses, and smaller animals, such as those of "Ringing Rocks," is very rare, and to my knowledge without an equal in the science of geology to-day.

WHAT CAUSED THEIR DISRUPTION?

There can be but one solution to that matter. While our workmen were engaged reducing the size of the rock we had selected, the keen scent of Professor Bolger detected a sulphurous odor rising with each blow of the sledge-hammer as each fragment fell from its parent formation, thereby establishing the fact that sulphur at one time formed a large portion of the underlying strata, and that its combination with phosphorus in its new and freshly created condition caused spontaneous combustion, which

no doubt continued for hundreds of years, drying the overlying mass of embryotic granite. In support of this reasoning, I find the weight of ordinary granite given at one hundred and sixty-five pounds per cubic foot, while these granite boulders comprising "Ringing Rocks" are more compact and weigh one hundred and seventy-three pounds per cubic foot, and the drying process to which they were subjected rendered them so compact and hard that it is difficult to get a tool to cut them. It is known by brick-makers that bricks that come in contact with the fire of the brick-kiln become more hard than those a distance from the fire. This slow-drying process has hardened those rocks and imparted that ringing sound.

That state of combustion continued in the interior of the hill until the waters of the flood rose and penetrated it, thereby coming in contact with the fire, which caused a series of explosions in quick succession, as the surface now indicates, which might only be equalled by the discharge of hundreds of tons of gunpowder, which no doubt caused that which was then melted in the interior of the hill to be forced out, which we now find against the hill-side and term trap-rock.

WHAT CAUSED THE EXPLOSION?

Scientifically speaking, water is composed of two gases, oxygen eight parts, and hydrogen one part. While in a liquid condition those gases remain in a latent state, but when superheated they become aroused and change from a liquid to a gaseous condition, and hydrogen gas being

highly explosive, requiring many thousand times more space, had the effect to rend those rocks asunder.

HOW CAME THOSE ANIMALS THERE, HAVING BEEN ORIGINATED IN ASIA, A DISTANCE DUE EAST OF PERHAPS OVER SEVEN THOUSAND MILES?

My answer is that they migrated there over the then existing isthmus, known as the Isle of Atlantis, which connected the eastern and western continents together. It would have required them to migrate only about seven miles per year, to have brought them here, allowing the world to have been created one thousand years when those foot-prints were made. They would then have had over six hundred years to "increase and multiply" before the cataclysm was sent for their destruction; and here let me remark that with the commencement of that migration westward a continued migration was inaugurated that has been kept up and is continuing ever since. After the destruction of "all living," those that were saved in the Ark disembarked near the plains of Ararat, and again travelled westward over the same isthmus to repeople the western continent; and about two thousand three hundred and forty-four years after the flood we find the "Wise Men of the East,"—namely, Casper the Athenian, Melchior the Hindoo, and Balthasar the Egyptian,—with their attendants, journeying westward towards Bethlehem to adore the infant Saviour; and about two thousand seven hundred years after that isthmus had sunk and was lost, thereby severing connection between the two continents, we find Christo-

pher Columbus cherishing the idea that there was a continent *due west*, which he struggled hard to discover, so that unborn generations might be profited thereby.

WHAT BECAME OF THOSE ANIMALS THE FOOTPRINTS OF WHICH YET REMAIN IN THOSE ROCKS?

In Genesis, Chapter VI., verse 7, "He said, I will destroy man, whom I have created, from the face of the earth, from man even to beasts, from the creeping thing even to the fowls of the air; for it repenteth me that I have made them."

We owe a debt of gratitude to the late Charles M. Wheatley and Professor E. D. Cope for their investigations and classification of the fossils found in the Port Kennedy bone cave which was discovered about thirteen miles east of south down the Schuylkill River below "Ringing Rocks," those mastodon remains and the fossil remains of other animals agreeing exactly with the footprints left in those rocks. I will not say that the bones found there were the bones of those animals that left their footprints in those rocks, but I do say that many of them were of like species. Doubtless the entire Schuylkill Valley was heavily covered with timber and grass, thus affording them a pleasant retreat, and when the flood came to cause their destruction, they were caught and covered up by that carbonate of lime and other drift material in which they were found.

THE HORSE

is said to be a native of Arabia, which joins Persia and the Persian Gulf on the west. If, however, the creation took

place in Asia, and, from our best information, in Persia, which is a part of Asia, then the claim of Arabia to the production of the horse is erroneous.

The fact that Arabia is in close proximity to Persia would lead us to believe that animals as well as man spread over Arabia before they migrated to America. But "Ringing Rocks" bear many hoofprints of horses varying from five to nine inches across, having raised surfaces fitting exactly to the concavity of the hoof, as well as the footprints of man, who may have brought the horse with him anterior to the Deluge. Truly the foregoing is a study for the science of Paleology.

PROBABLE SOURCE OF LIMESTONE.

I have before spoken of the probable source of limestone, and prolonged reflection strengthens my belief as to its source. We see large deposits of it in valleys on various parts of the earth, thus proving that before the flood the surface of the earth was much more uneven than it is now. We can trace the formation of granite, quartz, and some kinds of sand-rock which crystallized before the flood, by outcroppings, but not limestone, which strengthens my belief that it was an important element in the interior of the earth prior to the flood, and that it came to the surface when "the fountains of the *great deep* were broken up" in its plastic condition. We find granite, quartz, and sandstone of the first formation worn round by water pass-

ing over them, which proves that they were of antediluvian origin; but limestone of like formation cannot be found anywhere, and why shall we reason otherwise? The earth was yet new when the deluge took place; its interior was not crystallized, as it is at present; it had been created only sixteen hundred and fifty-six years, which was but a short time compared with the earth's age to-day.

I can trace the outcropping water-worn granite boulders through Chester, Montgomery, and Bucks Counties, Pennsylvania, and follow their disintegrated particles of sand, which have been carried down the Schuylkill River a distance of nearly forty miles, to a point known as "Flat Rock," which is formed of that material, near Manayunk, and find it deposited in layers now crystallized as hard as granite itself. I have also found large quantities of quartz or flint-rock, so called, deposited through the anthracite coal-fields, which were worn round during the antediluvian period, and are now crystallized into what is known as "conglomerate." I can trace the origin of coal to vast deposits of timber during the flood, which has been wisely deposited for our use; but the origin of limestone, which is found almost everywhere distributed over the earth, is in itself a mystery. That it is an overlying deposit is proved by those fossil remains which were found in the Port Kennedy bone cave having been covered up by it. Those remains correspond with the tracks which such animals made which are now found in "Ringing Rocks." No doubt like species roamed over "Ringing Hills" and browsed in the valley of the Schuylkill; and that limestone

was in a plastic condition is proved by its stratification below Norristown, where other detritus is deposited with it. When found in its virgin condition, it is pure white and has crystallized into pure white marble. That which is clouded, in the manner of the Rutland marble which forms the wainscoting of the corridors of the first floor of the Drexel Building, became so through a very slight trace of carbon which permeated it. That found in Mexico and California, having hues as if pencilled by the unerring hand of *Aurora*, may be traced to the waters of the deluge having been colored with *water-colors*, which permeated it while in its plastic state.

There can be no doubt of the non-existence of limestone on the earth's surface anterior to the flood, in consequence of it possessing properties different from all other mineral substances. Moses gives us but little information regarding mineral and metallic bodies. He only speaks of gold, bdellium, and the onyx-stone in the first chapter of Genesis.

Mr. R. E. Peterson, in his very excellent work entitled "Familiar Science, or the Explanation of Common Things," on page 167 asks, Why is quick-lime formed by burning limestone in a kiln? His answer is, Because the carbonic acid (which rendered it mild) is driven off by the heat of the kiln, and the lime becomes quick or caustic. On the page following he asks, Why does mortar becomes hard after a few days? His answer is, Because the lime reimbibes from the air the carbonic acid which had been expelled by fire, and the loose powder again becomes as hard as the original limestone.

Although this reasoning may be correct, it does not correspond with our experience in "common things." We are aware that all bodies, properties, or substances which come in contact with each other partake of such substances as they come in contact with; for instance, if wood lies in water that holds mineral salts in solution, the wood will partake of those mineral salts by absorption and petrify and become as the mineral itself. If fresh meat is exposed to the atmosphere, it will partake of the properties of the atmosphere, and that, being composed of nitrogen four parts and oxygen one part, the meat will become tainted by the nitrogen and putrescence will take place (providing the temperature is above the freezing-point).

We are compelled to reason thus with limestone. When limestone is put into a kiln, it is reduced to caustic or (as mechanics term it) quick-lime by coming in contact with heat, which is the result of fire, having carbon for its base, which when pure is charcoal. When fire is applied to the charcoal (or coal of any kind), the carbon is transformed into carbonic gas (not carbonic-*acid* gas), which enters the limestone and reduces it to quick-lime.

Mr. R. E. Peterson informs us that the *carbonic-acid gas* is driven out by the heat occasioned by the fire; whereas we think carbonic gas enters the limestone from the carbon from which it is generated. *Carbonic-acid gas* is a union of three parts of carbon and eight parts of oxygen, which oxygen could be supplied only by the atmospheric air. We cannot reason that limestone is the embodiment of carbonic-acid gas. Mr. Peterson, on page 163 of his work,

asks, What becomes of the carbonic-acid gas of crowded cities? His answer is that some of it is absorbed by vegetables, the rest is blown away by the winds and diffused through the whole volume of air. Thus we see that no allusion whatever is made to any of it being in limestone. When water is applied to caustic or so-called quick-lime, the carbonic gas is disengaged by the oxygen in the water, and the quick-lime is again transformed into limestone in its original condition.

There is no doubt that crystallization commenced first on the surface of the earth, while the interior was less solid, and that which is known to-day scientifically as carbonate of lime was yet in a plastic condition in the interior of the earth when the deluge took place.

ORIGIN OF ASBESTOS.

I have already stated my belief that *asbestos* is a product having timber for its base, the pores separating the fibre being filled with *steatite* or soapstone (so called) by absorption, by water passing over and through it, in like manner that petrifactions take place with mineral salts of other substances; the greasy nature of the soapstone prevents it from crystallizing as solidly as the carbonate of lime or oxide of iron, which allows it to be easily separated and manufactured into various articles which are used to repel heat. My belief is further strengthened by the fact that a beautiful specimen was found in the cut made by the Pennsylvania Schuylkill Valley Railroad immediately on the border and adjoining the soapstone quarry at Lafayette

Station, Montgomery County, Pennsylvania, by the workmen under Malcolm Patterson, engineer in charge of said operation, in the autumn of 1883. That vein of soapstone is vertical, running northeast to southwest, and perhaps varying from one hundred to two hundred feet in width, and occupying the earth's natural formation to an unknown depth. But limestone is an overlying deposit of the deluge.

SLATE IN COAL.

In a previous article I have said that our best instructors are those who analyze and simplify our studies. The vague description our geologists give of the origin of limestone is beyond the comprehension of any one.

They assert that limestone is the result of animalcula depositing a sedimentary substance in the water, but where those animalcula get that substance from is not explained. When we find large deposits of slate having limestone for its base, embedded between strata of coal and sand-rock, in alternate layers one above the other, deposited seemingly at the same time, we have a problem confronting us for which there is apparently but one solution.

There is no slate in bituminous coal, to my knowledge. The nearest resemblance to it is cannel-coal, which appears like slate, and *may* have carbonate of lime for its base, intermixed largely with resinous timber or other vegetation of like character, which imparts that free-burning property to it.

Coal-operators inform me that the impress of ferns and leaves of other vegetation is only found in the slate and

red shale formations bordering on the coal-measures. There is no doubt that these ferns and leaves were covered with the timber which now forms our coal, but could not be preserved in their original outline from the fact of the material in which they were deposited not being suitable for that purpose. We are enabled to accurately trace only the fossil remains of ferns and like production in the carbonate of lime, which was ejected from the interior of the earth at the time the "fountains of the great deep were broken up," which was then in a fine plastic consistency admirably suited to accommodate itself to the form of the plant, and thus preserve it in its entirety. We find shells and fossil remains of every kind numerously deposited in limestone at various places.

The coloring of slate among the coal is due to the presence of carbon and sulphur as a part of its composition, and, in proof of it having been supplied from the interior of the earth, I will analyze the measurements of Plymouth shaft No. 4 in the Wyoming basin, which measurements have only been given to a depth of three hundred and thirty-eight feet and one inch.

Commencing at the bottom and noting the strata as we ascend, we first find a bed of fire-clay three feet three inches thick, the properties of which are well known to brick-makers. The next stratum is a bed of red-ash coal forty feet nine inches thick, which is composed of every kind of timber (except resinous), and has been drifted there by the flood. The next stratum above that is brown sandstone sixteen feet three inches thick, which has crystallized

from sand. The next stratum above is fire-clay four feet eleven inches thick. The next above that is coal twenty feet ten inches thick. The next above is a stratum of slate. The next stratum above that is dark sandstone three feet one inch thick.

The next stratum is light slate five feet ten inches thick, which is carbonate of lime with a small amount of carbon in it. There are fifteen strata following above, composed of sand-rock, pebble-rock, fire-clay, coal, and other formations, amounting in the aggregate to one hundred and thirty feet five inches in thickness. Then there is a bed of coal of thirteen feet, on the top of which there is a bed of slate eight feet eleven inches thick, next above is a deposit of gray sandstone twenty-three feet three inches thick. The next stratum above is a bed of slate nine feet two inches thick, and the last or upper stratum is marked surface, which we believe to be an alluvial deposit forty-seven feet seven inches thick.

We have gone through five strata of slate, and made particular mention of four of them. The first one noticed is at a depth of two hundred and forty-one feet three inches from the top; the second stratum is eight feet eleven inches nearer the surface; the third noticed is eighty feet down from the top, and the fourth is only forty-seven feet seven inches from the surface.

There can be but one conclusion in this matter,—that is, that all those deposits which we have named have been deposited by the deluge at the same time, and those we now term slate have been formed from carbonate of lime

thrown out of the interior of the earth in a soft, plastic condition. Were it not so, the first deposit of carbonate of lime would have crystallized before the others had been made, and while that deposit was crystallizing like substances at other places would be undergoing the same transformation, and when the subsequent deposits should have taken place we would not have found them as they are now deposited.

OXYGEN THE CAUSE OF MINERAL SUBSTANCES CRYSTALLIZING.

For many years I have been acquainted with an outcropping of granite boulders running northeast and southwest across Chester, Montgomery, and Bucks Counties, Pennsylvania, along the head-waters of streams tributary to the Schuylkill River, which have all been worn round like cobble-stones, each of many tons' weight. It was always apparent that they had been worn off by erosion, but whether from the rains of over four thousand years gently falling on them or by a cataclysm which denuded them at once, was difficult to determine. I set out to investigate that fact this summer, and found the missing granules which were swept away by the deluge safely deposited deep in the earth and now composing *Flat Rock* at Manayunk, corresponding exactly with the missing material just described. But what caused crystallization to take place the second time, after having lain about sixteen hun-

dred and fifty-six years in their primeval condition, and now as solid as the parent boulders themselves?

I next attempted to solve the mystery of crystallization of *carbonate of lime*. I have been over "Ringing Rocks," and found the footprints of antediluvian animals in them, and, following the river about thirteen miles below to Port Kennedy, I found the remains of animals described by Prof. E. D. Cope in his report of the "Port Kennedy Bone Cave," exactly to correspond with such animals as would have made those footprints, except the horse. I next consulted cross-sections of borings made by our State Geologist of the anthracite coal fields, and found crystallization to have taken place there with material promiscuously deposited by the flood.

Actual investigation proves the fact that water has had *all* to do with crystallization. I have had experience in quarrying and digging wells in rock of primitive formation, and always have found the rocks much more solid as we descended into the earth where they had been subjected to water. I will not say that an increased solidity would be continued as we neared the centre of the earth. Water being composed of eight parts of oxygen and one part of hydrogen, it is reasonable to suppose that the mineral would absorb only a certain amount of oxygen as the water percolates through the earth and permeates the rock, which is the common cause for crystallization. Coal that is mined contains a certain amount of hydrogen which can be extracted from it and driven out of it by heat, and used for illuminating our streets and dwellings. The question is

how did the hydrogen get into the coal? Simply by water percolating through it and depositing the hydrogen in the coal.

Our best slate for commercial purposes is obtained below the water-level. Cobble-stones for street-paving that have lain in rivers with the water pouring over them are far more solid than minerals of like formation found on the surface of the earth.

Trusting that this may assist my readers to comprehend a matter which has for ages baffled the genius of educated minds, I will submit the fact for their consideration.

THE END.

LIBRARY OF CONGRESS
0 029 822 321 1